Service Manual

74 PMD740 /00B/02B/07B

6 Channel mixer/4 Track recoder

For repair information of the cassette mechanism see Service Manual of "Recorders tape deck NMZ-3110DH-2

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model PMD740

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All of the above locations are fully equipped to take care of your total service needs or can advice you. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country. In the event that there is no service location listed for your country, please contact the nearest facility for the necessary assistance.

In case of difficulties, do not hesitate to contact the Technical Department at above mentioned address.

1. SPECIFICATIONS AND SERVICE DATA

MECHANICAL CHARACTERISTICS

Tape	C-60 and C-90 type for CrO_2 only (70 μs EQ)
Track Format	4-track, 4-channel
Head Configuration	4-channel record/playback (permalloy) x 1 4-channel erase (ferrite) x 1
Motor	DC servo motor x 1
Tape Speed	Normal 4.8cm/sec ±1% High 9.5cm/sec ±1%
Pintch Control	±10%
Fast Wind Time	Approx. 110 seconds for C-60
Maximum Dimensions (W x H x D)	438 x 98 x 384 mm
Weight	4.2 kg

ELECTRICAL CHARACTERISTICS

Mic/Line Input (x 6)	
Source Impedance	Less than 10k ohms
Input Impedance	50k ohms
Nominal Input Level	−50 dBV (3 mV) ~ −10 dBV (0.3V)
Minimum Input Level	−60 dBV (1 mV) Trim Max.
Maximum Input Level	+6 dBV (2.0V) Trim Min.
Insert (x 4) Send (Chip)	
Output Impedance	100 ohms
Nominal Load Impedance	10k ohms
Minimum Load Impedance	2k ohms
Nominal Output Level	−10 dBV (0.3V)
Insert (x 4) Receive (Ring)	
Input Impedance	50k ohms
Nominal Input Level	−10 dBV (0.3V)
Stereo Line Input	
Input Impedance (XLR)	50k ohms (600 ohms)
Nominal Input Level	−10 dBV (0.3V)
Effect/Return (Ring)	
Input Impedance	5k ohms (MONO), 10k ohms (L, R)
Nominal Input Level	−10 dBV
Line Output (2)/Effect Output (x 1)	
Output Impedance	100 ohms
Nominal Load Impedance	10k ohms
Minimum Load Impedance	2k ohms
Nominal Output Level	−10 dBV (0.3V)
Headphone Output (Stereo x 2)	
Nominal Load Impedance	8 ohms
Maximum Output Level	100 mW + 100 mW (8 ohms)
Equalizer (Shelving Type)	
Low Frequency Range	100 Hz
High Frequency Range	10 kHz
Middle Frequency Range	200 Hz ~ 5.4 kHz
Range	±12 dB

RECORDER SECTION

Tape Output (x 4)/Tape Cue Output (x 1)	
Output Impedance	150 ohms
Nominal Load Impedance	10k ohms
Minimum Load Impedance	2k ohms
Nominal Output Level	−10 dBV (0.3V)
Sync Input	
Input Impedance	22k ohms
Nominal Input Level	−10 dBV (0.3V)
Sync Output	
Output Impedance	100 ohms
Nominal Load Impedance	10k ohms
Minimum Load Impedance	2k ohms
Nominal Output Level	−10 dBV (0.3V)
Power Supply	AC120V 60 Hz (with DA740PMDU) AC100V 50/60 Hz (with DA740PMDF) AC230V 50 Hz (with DA740PMDN)
Power Consumption	AC 9.5W
Accessories	AC Adaptor, DA740PMD

SERVICE DATA

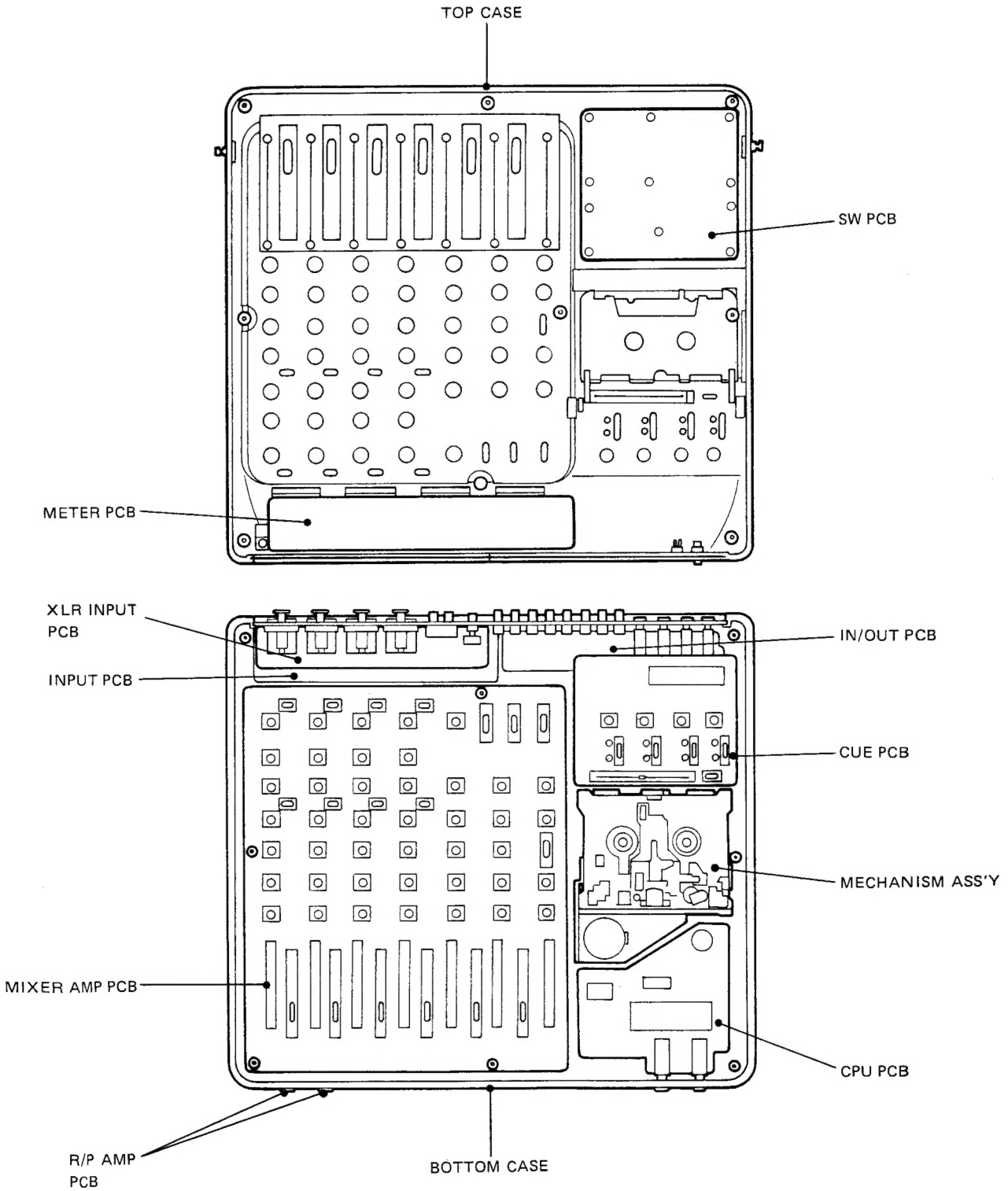
Tape Speed	
Speed Deviation	Normal 3000 Hz ± 45 Hz High 6000 Hz ± 90 Hz
Speed Variation Range	Within 30 Hz
Pitch Control	
Minimum	Normal 2700Hz High 5400Hz
Maximum	Normal 3300Hz High 6600Hz
Rewind Torque	
Playback, Record	35 ~ 75g-cm
F.FWD, REW	70 ~ 160 g-cm
Pinch Roller Pressure	300 ~ 500g
Wow & Flutter	0.15% (NAB weighted) ±0.15% peak (DIN/IEC/ANSI weighted)
Overall Frequency Response	Refer to 10-10
Overall Distortion	Refer to 10-11
Overall S/N Ratio	Refer to 10-12
Erasing Ratio	More than 65 dB

NOTES:

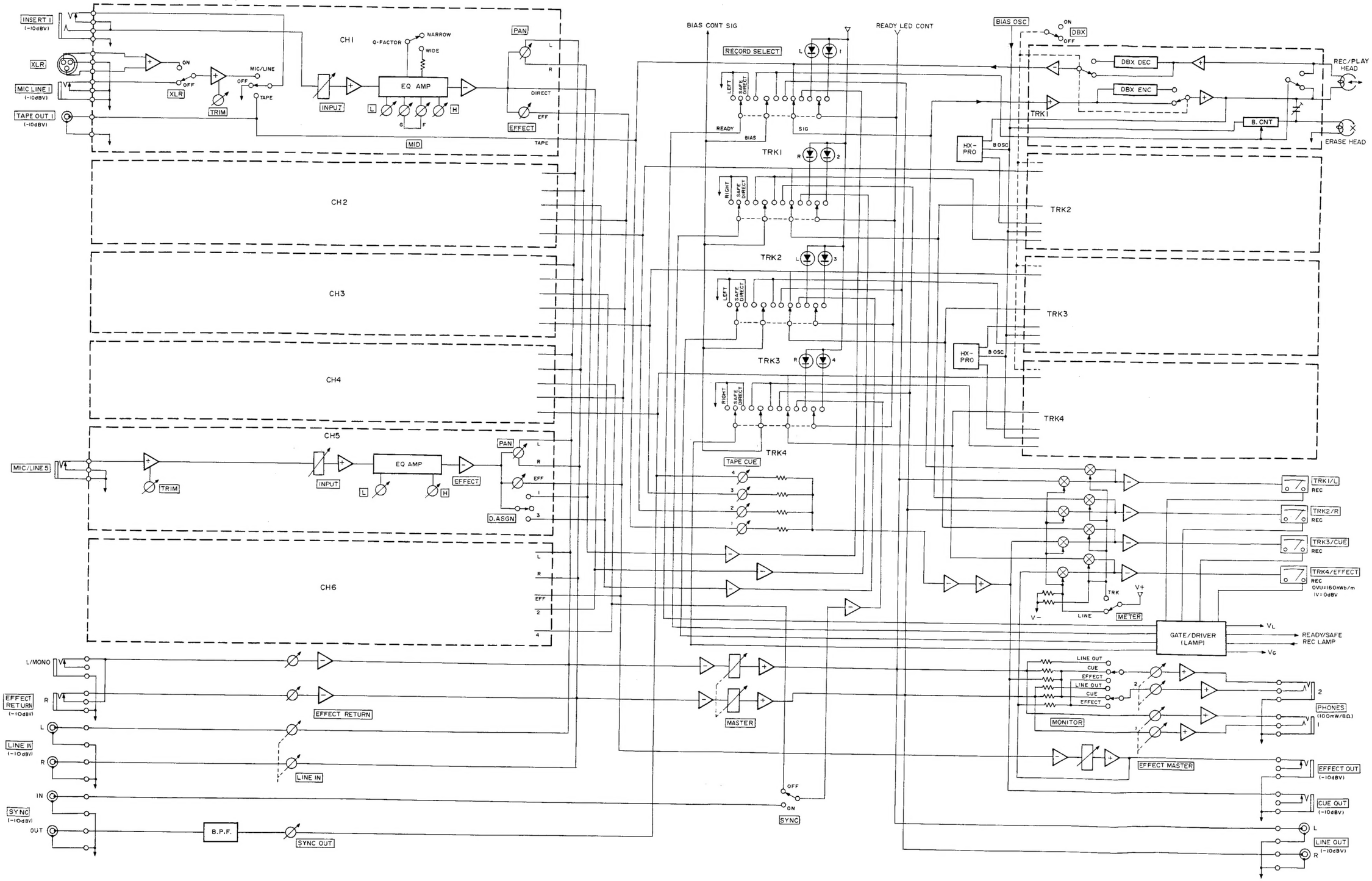
1. In these specifications, 0 dBV is referenced to 1.0 Volt. Actual voltage levels are also given in parenthesis (0.316V for −10 dBV is rounded of and given as 0.3V).
2. Changes in specifications and features may be made without notice or obligation.

- dBx Noise Reduction system made under license from dbx, Incorporated. The name "dbx" and the dbx symbol are trademarks of dbx, Incorporated.

2. PARTS LOCATIONS



3. BLOCK DIAGRAM



4. CIRCUIT DESCRIPTION

OUTLINE

1) This model is basically a six-channel mixer and a four-track cassette recorder which are internally connected for easy editing works such as ping-pont recording, over-dubbing, etc.
2) Fig. 3-1 is a block diagram showing overall schematic configuration.
3) To clearly understand signal flowing routines in the circuit, following signal routines are assumed as an example.
   a) An input signal (A) enters from MIC/LINE 1 with the track 1 set to the REC mode and a playback signal (B) is played back with the track 3 set to the PLAY mode.
   b) When the PAN knobs for the channel 1 and the channel 3 are set to L, the signals (A) and (B) are mixed in the bus line circuit following the circuit and output from LINE OUT L. The mixed signal are recorded on the track 1 side. When the PAN knob is set to R, the signal are output from LINE OUT R and recorded on the track 2 side.
   c) The LINE OUT output signal, the record source signal, and playback signal can be monitored with meter, headphone, and TAPE CUE OUT etc.
   d) A SYNC signal (c) is recorded and played back on the track 4.
   e) There are DIRECT assign function, INSERT terminals (CH1~CH4), EFFECT RETURN input terminal, and EFFECT OUT etc.

5. TEST EQUIPMENT/MATERIAL

Instruments (Specifications)		Usage
Wow & flutter meter	General model. Range: 0.03% or more Sensitivity: 10 mV or better Characteristics: JIS, NAB, DIN/CCIR, WTD/UNWTD	Wow & flutter measurement.
Frequency counter	General model. Sensitivity: 25 mV or better Impedance: 1 megohm or more Frequency range: 1 Hz to 10 MHz	Tape speed measurement, Wow & flutter measurement, Bias oscillation frequency measurement.
DC voltmeter	General model. Digital or analog. Sensitivity 0.1V or better	DC voltage measurement of DBX amp, etc.
AC level meter	General model. Range: –80 dB to +40 dB Impedance: 1 megohm or more, 25 pF or less Frequency band: 30 kHz or more	Signal level measurement, bias adjustment.
Audio oscillator	Frequencies: 10 MHz to 1 MHz Output level: 3V or more/ 600-ohm (variable) Distortion: No more than 0.1%	Input signal supply.
Attenuator	General model. Attenuation: 100 dB or more Step: 0.1 dB Impedance: 600 ohms	Input signal level setting.
Oscilloscope	General model. Sensitivity 20 mV/div. or better Sweep rate: 1 μsec./div. or better	Head azimuth adjustment.
Distortion meter	General model. Frequencies: 400 Hz, 1 kHz Sensitivity: 10 mV or better Measuring range: 0.1% or better	Output signal distortion measurement.
Band-pass filter	General model. Bandwidth: 1 kHz (±10%), 30 dB or more/oct. Bandwidth adjustment: Weighting network, IHF standard	Erasure effect measurement, crosstalk measurement.
Test tapes	TCC-111 4.75 cm/sec. TCC-211 9.5 cm/s	Tape speed measurement, wow & flutter measurement.
	TCC-120 A-bex TCC-130 A-bex TCC-142	Level (315 Hz/0 dB) Level (Dolby B type), distortion (200 nWb/m).
	TCC-261B A-bex	DIN reference level 31.5 Hz to 14 kHz, head azimuth and frequency response adjustments.
	AC-513 3180 & 70 μs Type II HI-BIAS TDK TCC-203B Type II A-bex	Blank tape (Chrome position).
	TCC-903 t=9μ A-bex	Mirror tape (for tape transport adjustment)
	TCC-194 A-bex	Crosstalk measurement, Separation measurement.
	TCC-152 (8 kHz) A-bex	Azimuth adjustment.
	TCC-284N	Frequency response adjustment (spot).
	THG-801C THG-802	Head gauge Guide gauge

6. MEASUREMENT CONDITIONS FOR MAINTENANCE

1) **Power Supply Voltage**
   Powered from AC adaptor (DA740PMD): within AC rating voltage ±5%.

2) **Reference Voltage 0 dBV = 1.0V**
   Reference line input level: –10 dBV (316 mV)
   Reference output level: –10 dBV (316 mV)

3) Unless otherwise noted, the output load should be 10k ohms.

4) The output impedance of the audio oscillator supplying a signal to the MIC/LINE jack(s) should be 600 ohms or less.

5) Before proceeding performance checks and alignments for playback and record operations, clean and erase the tape running pathes.

7. REMOVAL OF MAJOR PARTS

Sometimes it is difficult to see how to disassemble the parts. The following explains how to remove the major parts.

7-1 TOP CASE AND BOTTOM CASE

1) Remove the rotary VR knob (47 psc) and the slide VR knob (8 pcs).
2) Remove the nine screws securing the bottom case. (Fig. 7-1)

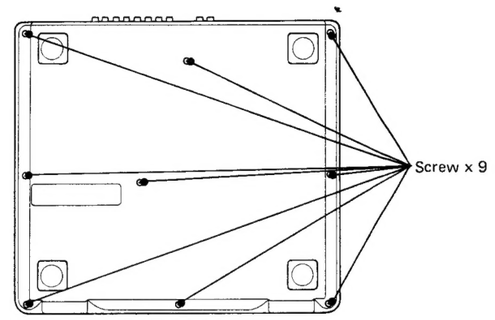


Fig. 7-1 Bottom Case Mounting Screws

7-2 MECHANISM ASS'Y

Remove the top case and pull off the six screws holding the mechanism assembly mounted on the bottom case. (Fig. 7-2)

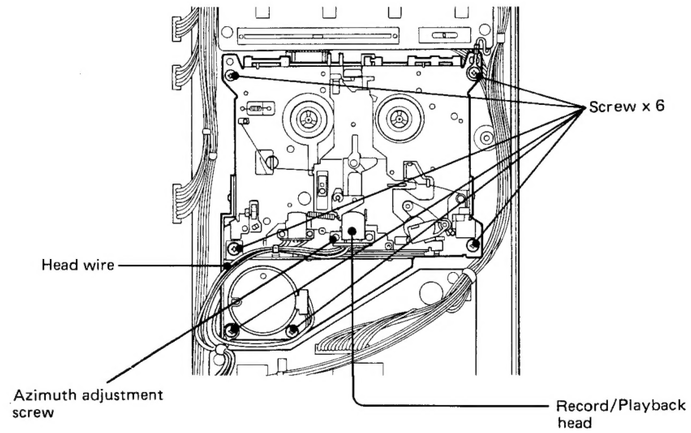


Fig. 7-2 Mechanism Assy

8. MECHANICAL CHECKS AND ADJUSTMENT

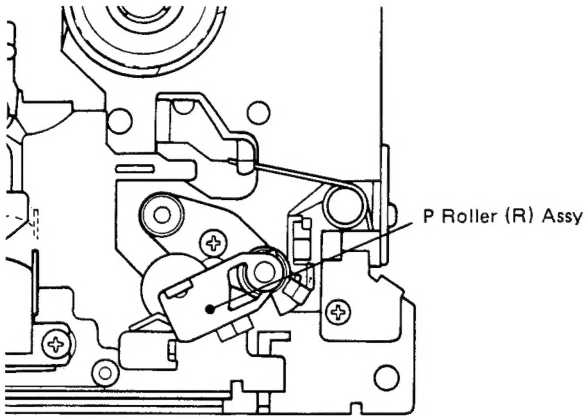


Fig. 8-1 Pinch Roller Pressure

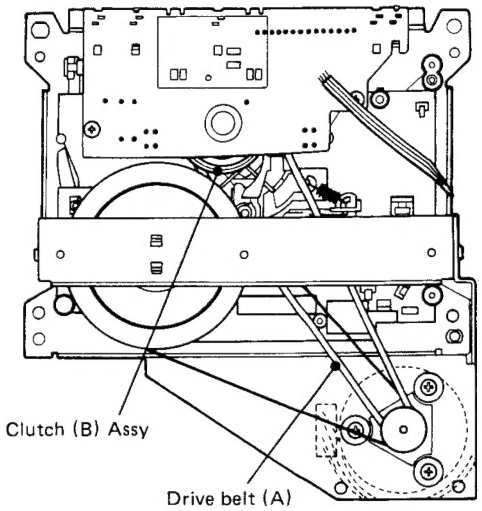


Fig. 8-2 Mechanism Assy PART

8-1 PINCH ROLLER PRESSURE

First remove the top case as shown in section 7-1.

1) Run the deck in PLAY mode and hook a tension gauge to the pinch roller (R) Assy.
2) Pull the gauge slowly and read the gauge when the pinch roller just stops rotating: The reading should be between 300 and 500g.

8-2 TAKE-UP TORQUE

Take-Up Torque for Reproducing and Recording

1) Load a cassette torque meter instead of a cassette tape in the cassette holder, and run the deck in PLAY mode.
   The meter reading should be:
   35 to 75 g-cm for Take-up torque (right reel table)
   2 to 6 g-cm for Back Tension torque (left reel table)
2) If the meter reading of the take-up torque is out of limits, remove the poli-slider washer set on the top of the take-up reel table (right) shaft and change the right reel table.
3) If the meter reading of the back tension torque is out of the limits, change the springs under the supplying reel table (left).

8-3 FF AND REW TORQUE

1) Load a cassette torque meter in the cassette holder and measure starting torque for both F.F. and REW operations with the tape rewound close to beginning of the tape or wound close to end of the tape, respectively.
   The reading should be:
   F.F. torque (right reel table): 70 ~ 160 g-cm.
   REW torque (left reel table): 70 ~ 160 g-cm.
2) If the torque is out of the limits, change Clutch (B) Assy and Drive belt (A) if necessary. (Refer to Fig. 8-2)

8-4 TAPE TRAVEL

Using a mirror tape (TCC-903), check to see that the tape is running stably without curling and touching the tape guides on the erase and rec/play heads.

If there is curling of the tape affecting the response or damaging the tape, it is necessary to check the head guide height, perpendicularity of the head face, and alignment of the pinch roller in relation to the capstan. Mirror tape (TCC-903) and Head Height Adjusting jig (THG801C & THG802) are required for checking.

To check the head guide height, the tape is replaced with the head height check jig (THG801C), which is put on the base.

While firmly seating the jig on the surface of the base, slide the jig (THG802) past each head guide to check if it goes through without hitting them.

Using the rear check bar of the jig (THG802), also check perpendicularity of each head face. If the guide is low, insert the required amount of 0.1 mm or 0.2 mm thick washers under the head mounting legs.

NOTE: Always adjust the head azimuth when the head height is adjusted.

8-5 HEAD AZIMUTH

Fine adjustment of the record/playback head should be made after the tape travel check has been completed.
For the erase head, only carry out the adjustment in 8-4 Tape travel.

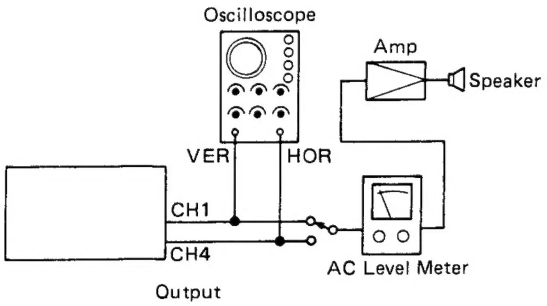


Fig. 8-3

1) Connect a vertical input terminal of an oscilloscope to the TAPE OUT "1" jack and a horizontal input terminal to the TAPE OUT "4" jack.
2) Load the deck with a test tape and playback the test signal.
3) First reproduce a test tone of 315 Hz, and coarsely adjust the azimuth adjusting screw (Fig. 7-2) to obtain approx. zero phase difference as shown in the Fig. 8-4. Next, reproduce a high frequency tone of 10 kHz and proceed to the fine adjustment.

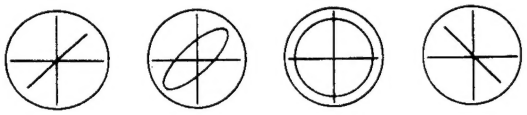


Fig. 8-4

4) Confirm that the output level of TAPE OUT 2 & 3 is not relatively low compared with that of TAPE OUT 1 & 4.

8-6 TAPE SPEED

1) Connect a frequency counter to either one of TAPE OUT jacks.

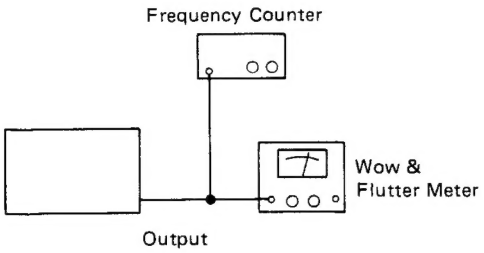


Fig. 8-5

2) Playback a wow & flutter test tape and following values will be obtained.
   Deviation: 3000 Hz ± 45 Hz (4.76 cm/sec),
   6000 Hz ± 90 Hz (9.5 cm/sec)
   Width of deviation: Within 30 Hz
   Pitch control range*: Minimun 2700 Hz, 5400 Hz.
   Maximum 3300 Hz, 6600 Hz.
   * Tape speed becomes minimum with the PITCH control knob turned up to the leftmost and maximum with the PITCH control knob turned up to the rightmost.
3) If the speed deviation is out of the limits, adjust as follows;
   a) Remove the top case as mentioned in section 7-1.
   b) Clean the tape path and check the pinch roller pressure and take-up torque.
   c) If they are normal, place the PITCH control in the center "click stop" position and reproduce approx. mid position of the test tape.
   d) Adjust the trim pot RM09 (RM11) (Refer to Fig. 7-2) provided on the CPU PCB with a small "—" driver to obtain 3000 Hz ± 5 Hz reading on the frequency counter.
   The checks and adjustment should be performed at least one minute after the capstan motor has been started to rotate.
   e) First adjust with 9.5 cm/sec., then adjust with 4.75 cm/sec.

8-7 WOW AND FLUTTER

Reproduce Method:
1) Connect a wow and flutter meter to one of TAPE OUT jacks.
2) Reproduce with a Wow and Flutter Test Tape.
3) The measurement should be performed at both beginning and end of the tape.
   Specification: 0.15% (NAB weighted)
   ±0.15% peak (DIN/IEC/ANSI weighted)

NOTE: Proceed to the measurement after cleaning the tape path, especially capstan shaft, pinch roller, and the head surfaces.

9. MIXER SECTION SIGNAL CHECKS AND ADJUSTMENTS

9-1 INITIAL SETTINGS OF CONTROL SWITCHES AND KNOBS

1) Before proceeding adjustments, set each control knob and switch as shown below (as the pre-set condition).

Input fader	Max.
Master fader	Scale position 7 ~ 8
INPUT selector	MIC/LINE
RECORD SELECT switch	SAFE
MONITOR switch	LINE OUT
PHONES knob	Min.
TAPE CUE knob	Min.
SYNC knob	Min.
TRIM knob	LINE (fully counterclockwise)
EQ-HIGH, LOW, MID-GAIN	Center (click position)
EQ-MID-SHIFT	Center
EFFECT knob	Min.
EFFECT MASTER knob	Max.
EFFECT RETURN knob	Min.
PAN knob	L (fully counterclockwise)
DBX switch	OFF
SYNC switch	OFF
METER switch	TRK
PITCH CONTROL fader	Center (click position)

2) Apply −10 dB (316 mV), 1 kHz signal to the MIC/LINE jack (1).
3) Under this condition, the signal develops at LINE OUT L. Adjust the input fader of channel 1 so that the output at the LINE OUT L terminal is attenuated by 6 dB. Under this condition, the input fader knob will show 7 ~ 8 on the scale. This position is the reference setting position for the input fader.
4) Adjust the MASTER fader until the specified level −10 dBV (316 mV) is obtained on the LINE OUT (L) jack. Under this condition, the MASTER fader will be located at "7 ~ 8" on the scale and the position is the reference setting position. This is named to the reference condition.
5) Check that the output signal −10 dBV ±1 is obtained on the LINE OUT (R) jack when turning the PAN knob clockwise fully (R).
6) Under the condition of the preceding step 4, set the input signal level to −50 dBV (3.16 mV), and adjust the TRIM knob so that the level at the LINE OUT L become the specified level −10 dB (316 mV). The position will be approx. max. (MIC) turning clockwise.
7) Referring to the steps 2, 3, 5 and 6, set each input line knob of the input channels 2 ~ 6 and check each position.
8) Adjust the EFFECT knob from the input fader reference position stated in the step 3, above (with the EFFECT MASTER knob at Max.) until EFFECT OUTPUT level of −10 dBV (316 mV) is obtained.
9) With the MASTER fader knob set to the reference position at the reference conditions, feed the signal of −10 dBV (316 mV) to the EFFECT RETURN input jack. Adjust the EFFECT RETURN knob until the LINE OUT (L) of −10 dBV (316 mV) is obtained. Under this condition, the knob will show 2 ~ 3 o'clock position.
10) Check of the stereo LINE IN jacks
Supply −10 dBV(316 mV), 1 kHz signals to the stereo LINE IN jacks on the rear panel. When the nearby variable resistor is set to maximum position, check that −10 dBV (316 mV) signals are output at the LINE OUT jacks in the standard condition.

9-2 LEVEL ADJUSTMENT OF VU METER

1) Set as follows under the reference condition (−10 dBV (316 mV) is output at LINE OUT L jack).
RECORD SELECT: LEFT (TRK1, TRK3)
METER: TRK
The VU meter of TRK1 and TRK3 will indicate 0 VU.
2) Set as follows under the condition of 1, step 5 (−10 dBV (316 mV) is output at LINE OUT L jack).
RECORD SELECT: RIGHT (TRK2, TRK4)
METER: TRK
The VU meter of TRK2 and TRK4 will indicate 0 VU.
3) Make adjustments with a minus driver from the rear of METER PCB (Fig. 9-2).
TRK1: RX12 TRK2: RX22
TRK3: RX32 TRK4: RX42

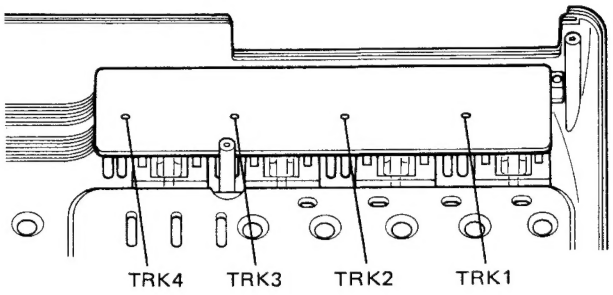


Fig. 9-2 VU Meter Adjustment

9-3 FREQUENCY RESPONSE

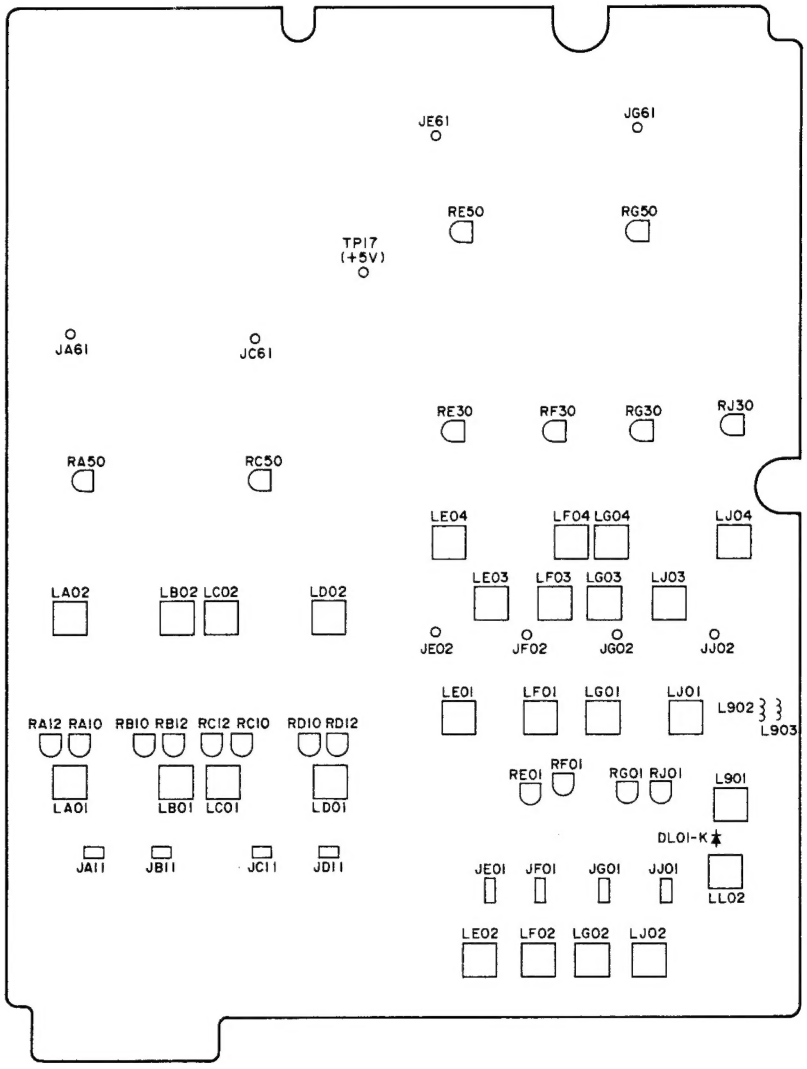
1) MIC/LINE LINE OUT, EFFECT OUT
Check that the frequency response is in the specified range under the condition of item 1, steps 4, 5 and 6.
Specification: 40 Hz ~ 15 kHz within +1 dB/−2dB
2) EFFECT RETURN ~ LINE OUT JACK
Check that the frequency response is in the specified range under the condition of item 1, step 9.
Specification: 40 Hz ~ 15 kHz within +1 dB/−2dB

9-4 EQUALIZER RESPONSE

Under the reference condition, check that the LINE OUT level changes as follows at each frequency by turning each EQ knob.

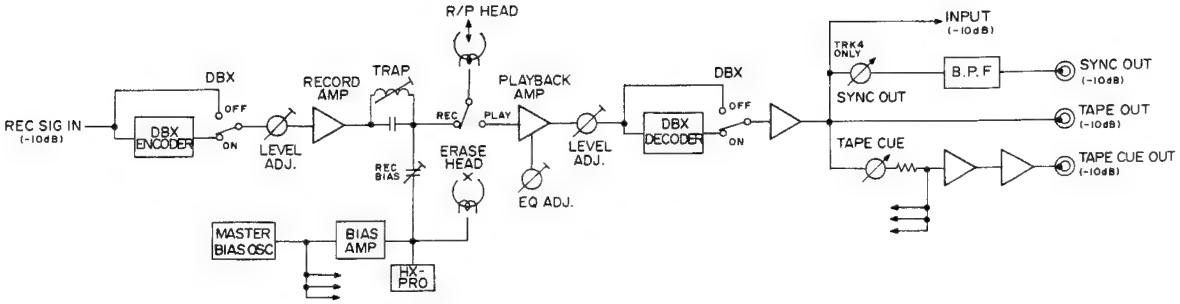
EQ HIGH knob max., min.:	±12 dB ±2 dB at 10 kHz
EQ LOW knob max., min.:	±12 dB ±2 dB at 100 Hz
EQ MID- GAIN knob : SHIFT	200 Hz ~ 5.4 kHz ±12 ±2 dB
Q-FACTOR switch:	The bandwidth shall vary. OFF : Narrow Band ON : Wide Band

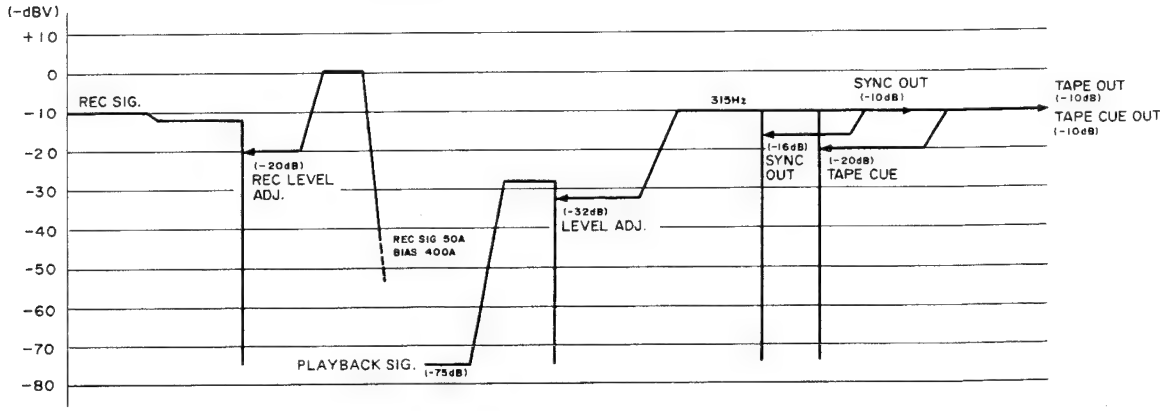
ADJUSTMENT POINT COMPONENT SIDE

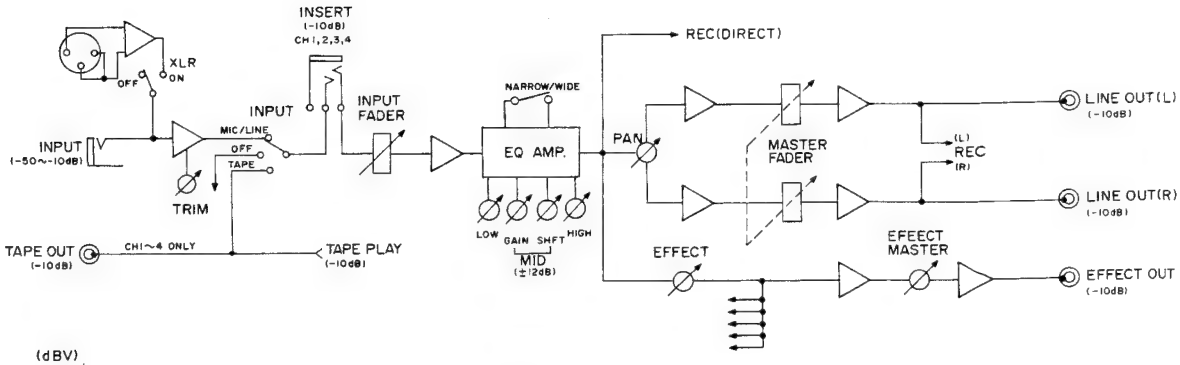


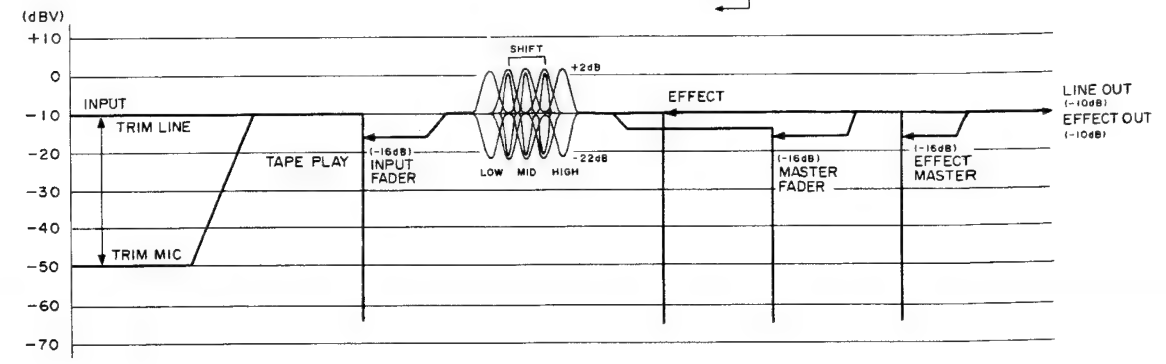
NO. TRK	1	2	3	4	FUNCTION	CHECK POINT
1	RA10	RB10	RC10	RD10	PLAYBACK LEVEL CAL	TAPE-OUT
2	RA12	RB12	RC12	RD12	PLAYBACK EQ	TAPE-OUT
3	RA50		RC50		DECODE TIME	TP17 ↔ JA61/JC61
4	RE50		RG50		ENCODE TIME	TP17 ↔ JE61/JG61
5	LL02				BIAS OSC FREQUENCY	DL01-Kathod
6	L901				+/−15V DC SUPPLY	GND ↔ L903 (+15V)/L902 (−15V)
7	RE30	RF30	RG30	RJ30	REC LEVEL	TAPE-OUT
8	RE01	RF01	RG01	RJ01	BIAS LEVEL	TAPE-OUT
9	LA01	LB01	LC01	LD01	PLAYBACK BIAS TRAP	TAPE-OUT
10	LA02	LB02	LC02	LD02	PLAYBACK LPF	TAPE-OUT
11	LE01	LF01	LG01	LJ01	REC BIAS TUNING	JE01-2 ↔ JE01-1, F, G, J
12	LE02	LF02	LG02	LJ02	ERASE BIAS TUNING	JE01-2 ↔ JE01-3, F, G, J
13	LE03	LF03	LG03	LJ03	REC BIAS TRAP	JE02, JF02, JG02, JJ02
14	LE04	LF04	LG04	LJ04	REC EQ (HIGH SPEED)	TAPE-OUT

LEVEL DIAGRAM









10. RECORD/PLAYBACK AMPLIFIER CHARACTERISTICS

10-1 PLAYBACK LEVEL

1) Connect a level meter to the TAPE OUT jack on the side panel. Set the normal speed.
2) Place the DBX switch in OUT position and playback a test tape TCC-130, 400 Hz, and adjust the trim pot RA10 Fig. 00 for −7 dB (447 mV) reading on the level meter.
   TAPE OUT 1: RA10 TAPE OUT 2: RB10
   TAPE OUT 3: RC10 TAPE OUT 4: RD10
3) Under this condition, place all RECORD SELECT switch in the SAFE position and the METER switch in TRK position, and the VU meter indicates +3 VU ±1 VU.
   * Converted so that 160 Wb/m corresponds to 0 dB.

10-2 PLAYBACK FREQUENCY RESPONSE

1) Connect a level meter to the TAPE OUT "1" jack on the side panel.
2) Playback a test tape TCC-261B and reads the output level; it should be within the following limits.
   Head azimuth check: The frequency response is out of the specification if the head was cleaned, adjust trim pot RA12 with the test frequency set to 10 kHz.
3) For the remainings, also check in the same manner. Adjustment trim pots are as follows.
   TAPE OUT 1: RA12 TAPE OUT 2: RB12
   TAPE OUT 3: RC12 TAPE OUT 4: RD12

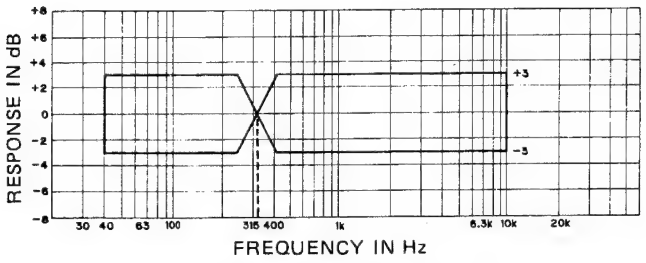


Fig. 10-2 Playback Frequency Response

10-3 DBX TIME ADJUSTMENT

The adjustment is necessary only when the DBX IC is changed.

1) Decode mode
   Adjust each trim pot until the DC voltage across each resistor is 15 mV with the DBX switch set to IN and all tracks set to the PLAY mode.

TRACK	TRIM POT	REG.	CHECK POINT
1/2	RA50	RA61	JA61 ↔ TP17
3/4	RC50	RC61	JC61 ↔ TP17

2) Encode mode
   Set the DBX switch to IN and load a blank tape. Set the mode to REC-PAUSE with the RECORD SELECT switches of all tracks to the DIRECT side.
   Adjust each trim pot until the DC voltage across each resistor is (15 mV).

TRACK	TRIM POT	REG.	CHECK POINT
1/2	RE50	RE61	JE61 ↔ TP17
3/4	RG50	RG61	JG61 ↔ TP17

10-4 BIAS OSC FREQUENCY

Readjust the bias OSC frequency when the master oscillator OSC Transe (LL02) is changed.
Set the mode to REC-PAUSE with a blank tape loaded. Adjust LL02 until the bias OSC frequency is 80 kHz ± 0.5 kHz at the output side (diode DL01 cathode terminal) of the oscillator (LL02).

10-5 BIAS TUNING OF BIAS AMP

Make the tuning when the master OSC trance or the erase head is changed.
Set the all tracks to the REC-PAUSE mode and adjust each bias amp. Until the DC voltage across each resistor is minimum (less than 25 mV).

TRACK	COIL	REG.	CHECK POINT
1	LE01	RE04	JE01-1 ↔ 2
2	LF01	RF04	JF01-1 ↔ 2
3	LG01	RG04	JG01-1 ↔ 2
4	LJ01	RJ04	JJ01-1 ↔ 2

10-6 BIAS TRAP OF PLAYBACK AMP

Proceed the tuning when the oscillator trance (LL02) is changed.
Set the track to be adjusted to the PLAY mode and the adjacent track to the REC-PAUSE mode. Adjust the bias trap until the amp. output terminal voltage (bias leakage) of the track to be adjusted is minimum.

TRACK	COIL	CHECK POINT
1	LA01	TAPE OUT 1
2	LB01	TAPE OUT 2
3	LC01	TAPE OUT 3
4	LD01	TAPE OUT 4

10-7-(1) Bias trap

Make the adjustment when the oscillator trance (LL02) is changed.
Set the all tracks to the REC-PAUSE mode and adjust each bias amp. Until the bias leakage voltage of each resistor terminal is minimum.

TRACK	COIL	REG.	CHECK POINT
1	LE03	RE11	JE02
2	LF03	RF11	JF02
3	LG03	RG11	JG02
4	LJ03	RJ11	JJ02

10-7-(2) Erasure bias voltage adjustment

This should be re-adjusted after having replaced the master oscillator (LL02) or the erase head.
With all tracks in the REC-PAUSE mode, adjust the erase transformer to minimize the DC voltages across the resistors listed below. (0.65V)

TRACK	TRANCE	REG.	CHECK POINT
1	LE02	RE05	JE01-3 ↔ 2
2	LF02	RF05	JF01-3 ↔ 2
3	LG02	RG05	JG01-3 ↔ 2
4	LJ02	RJ05	JJ01-3 ↔ 2

10-7-(3) Reproduce LPF adjustment

This should be re-adjusted after having replaced the master oscillator (LL02) or the erase head.

With all tracks in the REC-PAUSE mode, adjust the coil to minimize the bias leakage current output at TAPE OUT.

TRACK	COIL	CHECK POINT
1	LA02	TAPE OUT 1
2	LB02	TAPE OUT 2
3	LC02	TAPE OUT 3
4	LD02	TAPE OUT 4

10-8 BIAS VOLTAGE SETTING

1) Set the input fader and the knob to the reference positions as mentioned under the section 9.
2) Connect an audio oscillator to the MIC/LINE (1) jack and a level meter to the TAPE OUT (1) jack. Set the RECORD SELECT switch to be adjusted to the DIRECT side and load a blank tape AC-513 (or TCC-203B).
3) Connect an AC voltmeter across pins 1 and 2 of JA11, set semi-fixed resistor RE01 to the minimum position, and turn it gradually clockwise until the saturated point. Ensure that the voltage at the saturated point is 3.5 mV ±0.5 mV.
4) Adjust for the remaining tracks in the same way.

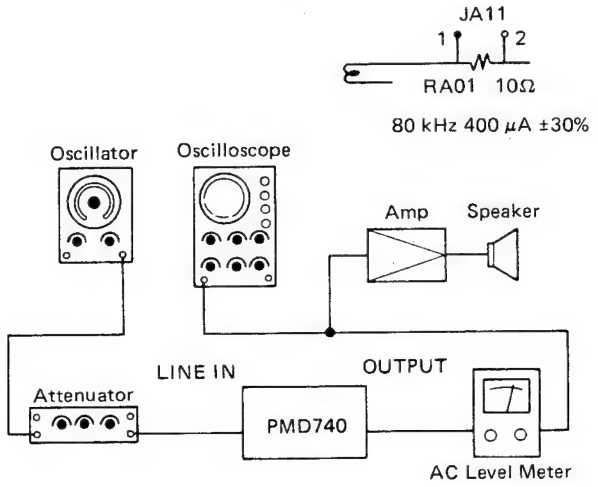


Fig. 10-8 Bias Voltage Measurement

10-9 RECORD LEVEL

1) Set the input faders and the knobs to the reference positions as mentioned under the section 9.
2) Connect an oscillator to the MIC/LINE (1) jack and a level meter to the TAPE OUT (1) jack. Set the RECORD SELECT switch to be adjusted to the DIRECT side and load a blank tape AC-513 (or TCC-203B).
3) Record the reference level input signal 400 Hz, −10 dBV (316 mV) on the TRK1. Play back the signal and adjust RE30 until the TAPE OUT level is the reference level −10 dBV (316 mV).
4) For the remaining tracks, adjust the recording level in the same way.
   TRK1: RE30 TRK2: RF30
   TRK3: RG30 TRK4: RJ30

10-10 OVERALL FREQUENCY RESPONSE

1) Connect the test equipments as mentioned under the steps 1 and 2 of "9-9 RECORD LEVEL".
2) Decrease the input signal level by 20 dB from the reference level and set the level to −30 dBV (3.16 mV). Set the tape speed to high speed (9.5 cm/sec).
3) Vary the input signal frequency over a range of 40 Hz to 10 kHz and record the frequencies, and then playback the signals just recorded. The playback output levels should be as shown in Fig. 10-10.
   * If the output reading is out of the limits, check the playback frequency again. If the playback response is correct try to readjust the bias voltage as mentioned in 9-8. When the output level is lower than the limit, decrease the bias level slightly, and when higher increase the bias slightly. However, recording distortion may increase the bias voltage is lowered excessively, so make sure the distortion is within the limit, less than 2.5% at 400 Hz at the reference record level.
4) Set the tape speed to normal speed (4.76 cm/sec), and perform the same checking as 3).

NOTE: Varying the bias voltage may upset the recording level adjustment, so always make sure the recording level and readjust the level again as necessary by referring to the section 10-9.

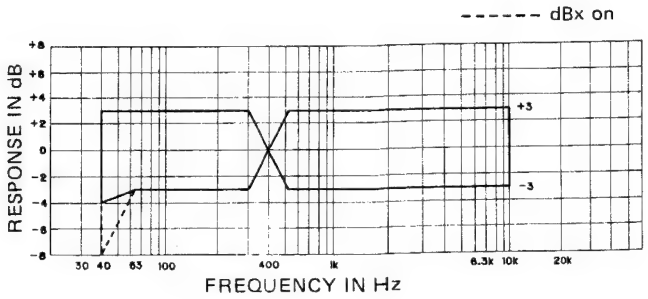


Fig. 10-10 Overall Frequency Response

10-11 OVERALL DISTORTION

1) Set and adjust the test setup as mentioned under the steps 1 and 2 of "10-9 RECORD LEVEL".
2) Vary the frequency of the reference input signal to 400 Hz, and record and play back the frequency. Measure the distortion; it should be less than 2.5%.
   If out of limits:
   * Readjust the bias voltage. Reference bias current is about 350 μA.
   * Try to erase the erase and record/playback heads, or replace the head(s).
   * Check for overall S/N.

10-12 OVERALL SN RATIO

1) Set and adjust the test set-up as mentioned under the steps 1 and 2 of "10-9 RECORD LEVEL".
2) Record the reference input signal 400 Hz, and then remove the input plug and continue the recording with no signal applied.
3) Playback both the reference signal and no signal just recorded and read the level difference between the outputs. The difference (SN) should be higher than 43 dB for each track, when measured through a 20 Hz to 20 kHz filter.

10-13 ERASING RATIO

1) Connect test equipments as shown in Fig. 10-13 and adjust the controls and switches as mentioned under the steps 1 and 2 of "10-9 RECORD LEVEL".
2) Adjust the signal generator to provide 1 kHz, 0 dBV and record it. Playback the signal just recorded and read and note the output level.
3) Rewound the tape up to the beginning of the tape just recorded. Remove the plug from the MIC/LINE jack and then record no signal on the tape just recorded with the 1 kHz signal.
4) Rewound the tape just recorded with no signal and playback it. Read the output level with the level meter sensitivity increased.
   Compare the output levels obtained in the steps 2 and 4; the level difference should be higher than 65 dB for each channel. Reference: Current consumption more than 30 mA

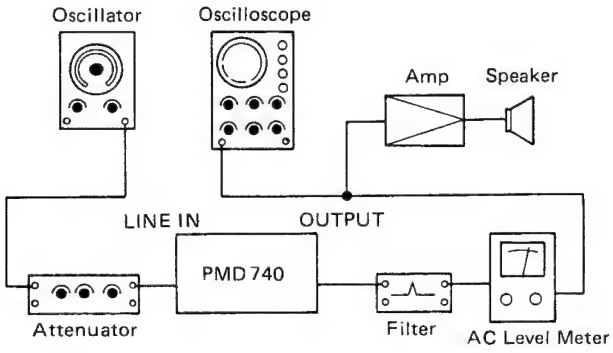


Fig. 10-13 Erasing Ratio Measurement

10-14 CROSSTALK BETWEEN CHANNELS

1) Set and adjust the test equipment as mentioned under the steps 1 and 2 of "10-9 RECORD LEVEL".
2) Record the reference signal of 1 kHz, −10 dBV (316 mV) on the TRK1. Rewound the tape just recorded and playback it. Measure the leakage output levels to the adjacent channels through a 1 kHz filter, and measure ratio(s) against the reference level.
   The ratio should be higher than 45 dB for each channel.

10-15 SYNC CROSSTALK

This refers to the crosstalk between adjacent tracks when a SYNC recording is made. In other words, it refers to the degree of the bias signal leakage into adjacent tracks from a recording track.
Set each track as mentioned under "10-9 RECORD LEVEL".

- **Crosstalk between Track #1 and #2**
  1) Place the RECORD SELECT TRK1 switch in the "ON", and TRK2 switch in the "SAFE" positions.
  2) Measure the output at the TAPE OUT 2 jack with the TRK "1" set to record mode and the TRK 2 to playback mode.
  3) Change the input signal frequency to 10 kHz and check how much of the signal applied to the TRK "1" leaks into the TRK2, or read the level difference against the reference level. The difference should be less than 0 dB at 10 kHz.
- **Crosstalk between Other Tracks**
  1) The same method used for measuring crosstalk between TRK1 and TRK2 is used. When measuring crosstalk between other tracks, the RECORD SELECT switch should be set as below. Number in parenthesis indicates the setting from the opposite channel.

Setting or RECORD SELECT switch

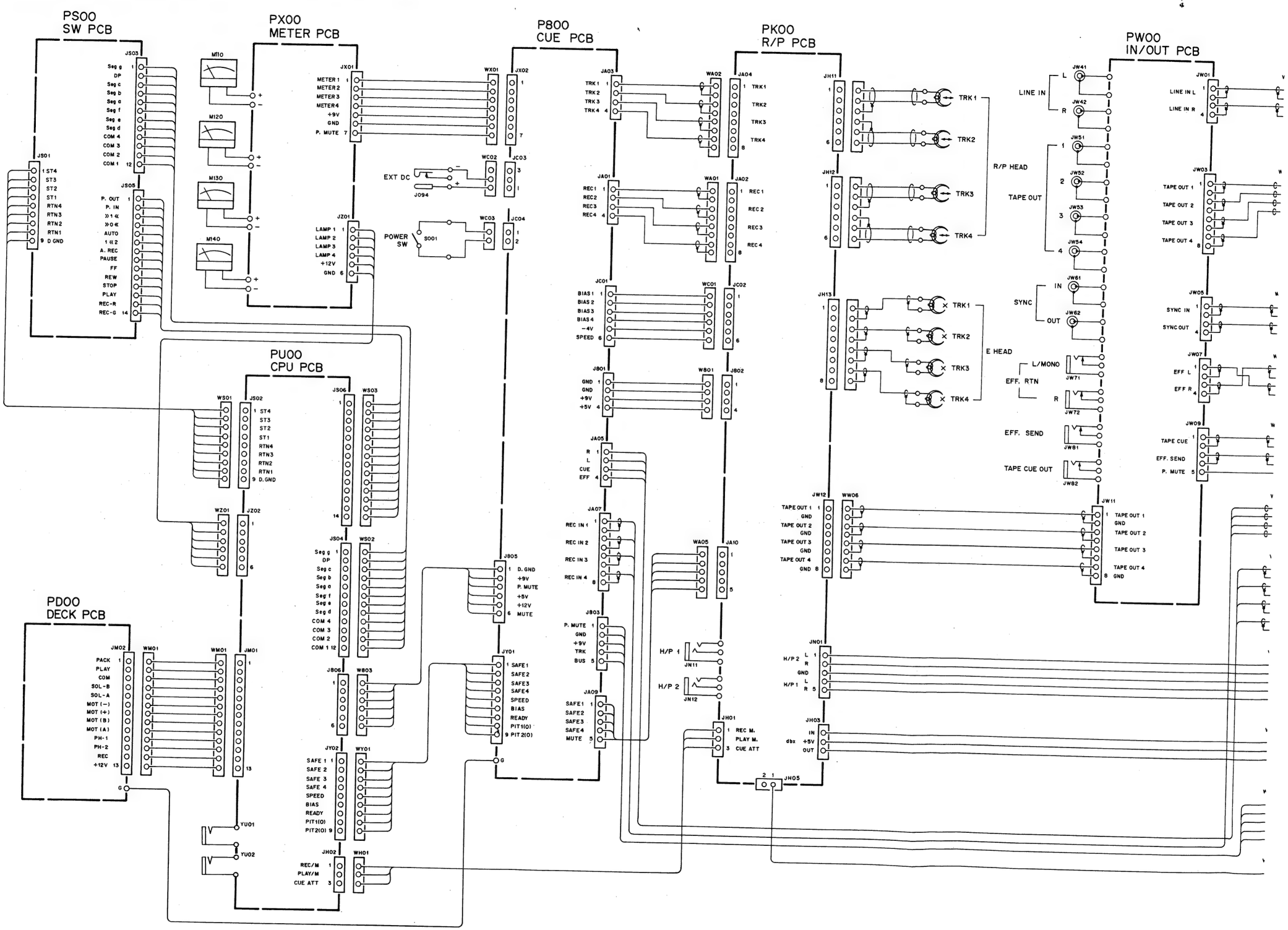
Combination	Record Track	Playback Track
Between tracks #1 and #2	TRK1	SAFE 2
	(TRK2)	(SAFE 1)
Between tracks #2 and #3	TRK2	SAFE 3
	(TRK3)	(SAFE 2)
Between tracks #3 and #4	TRK3	SAFE 4
	(TRK4)	(SAFE 3)

10-16 SYNC SIGNAL R/P

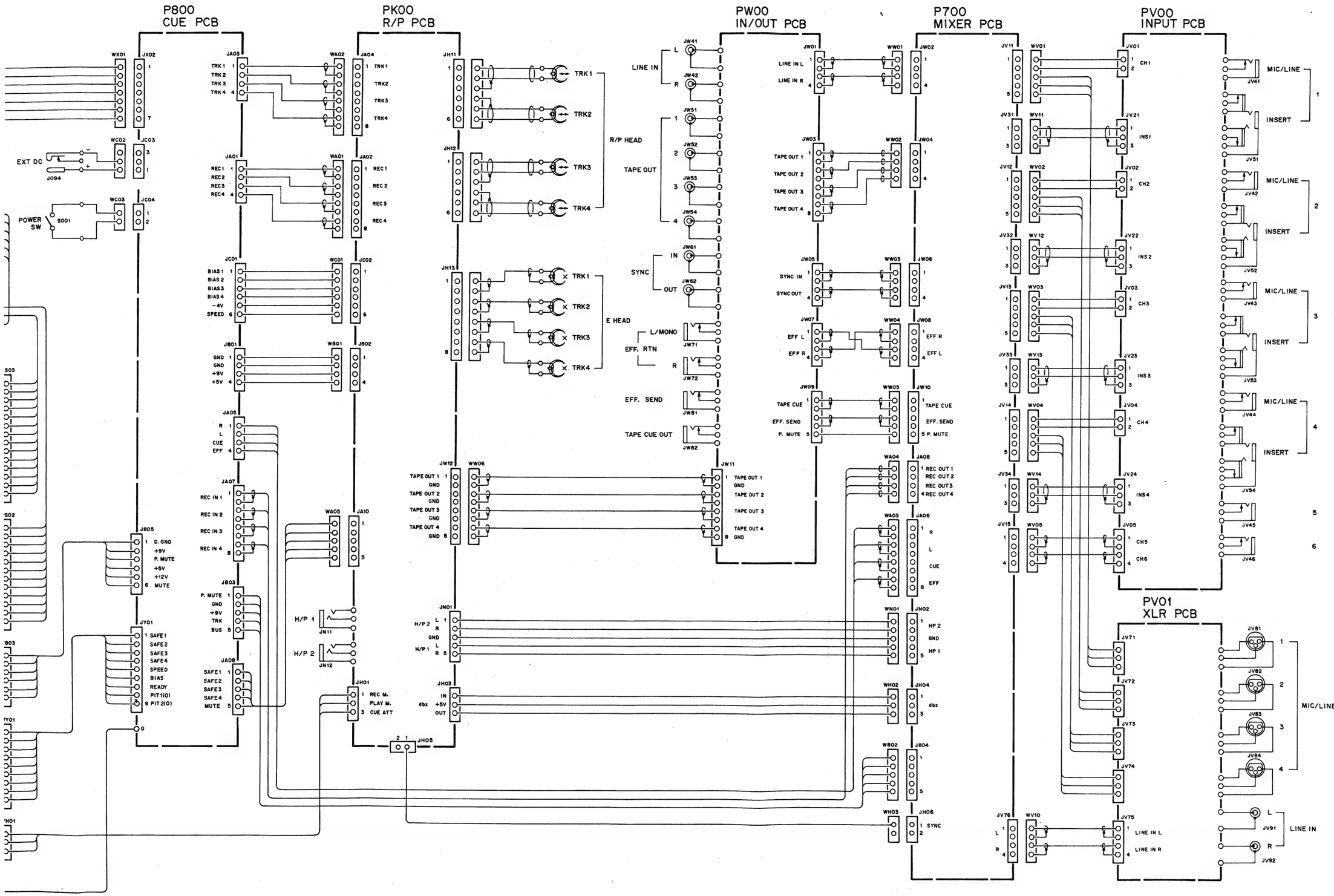
The TRK4 is exclusively used for recording and reproducing of the SYNC signal.
The input signal is applied to the SYNC IN terminals instead of the MIC/LINE terminals. In the same way the SYNC OUT terminals are used instead of TAPE OUT 4 when reproducing.

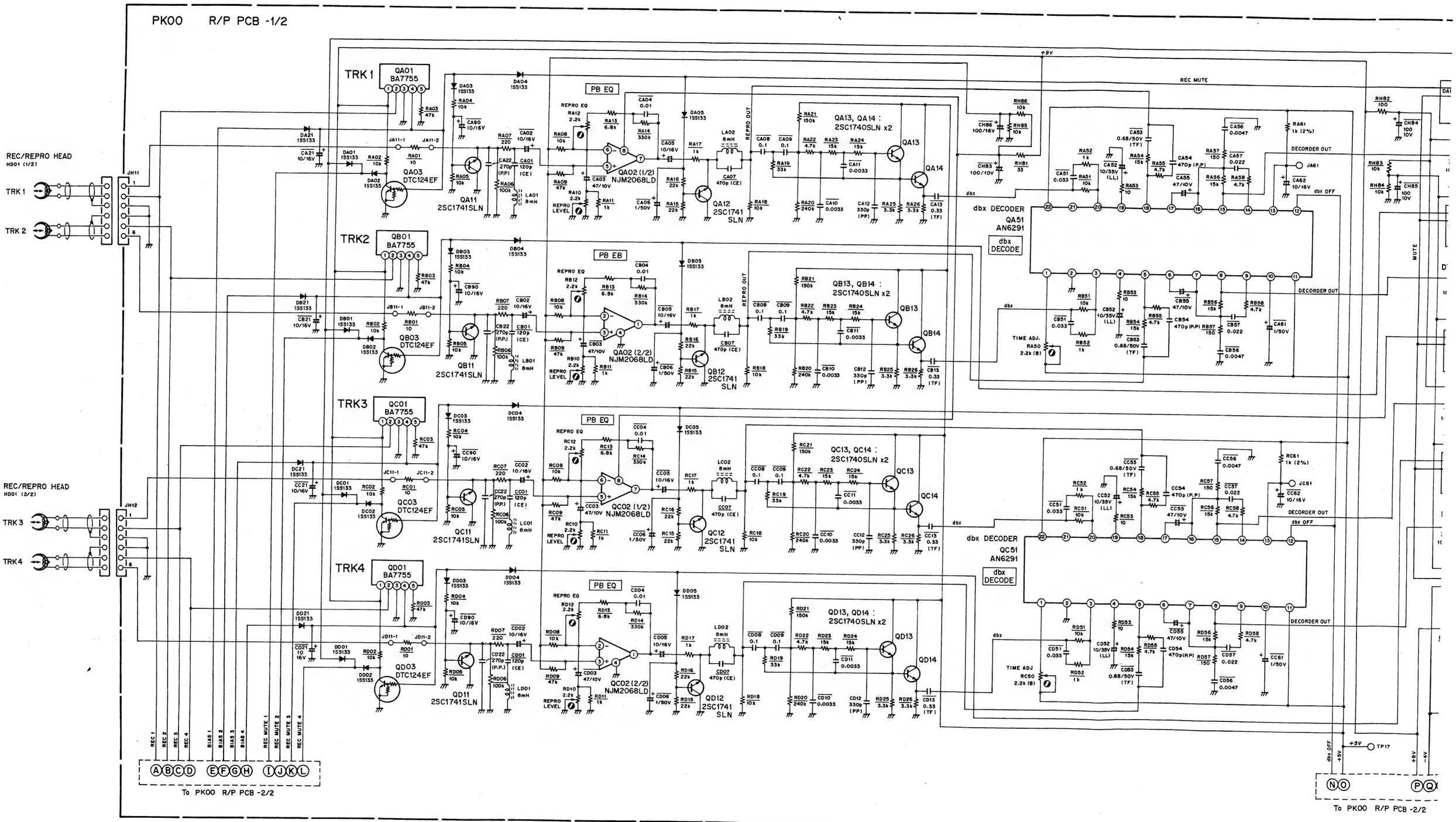
1) Apply the SYNC reference input signal of −10 dB (316 mV) to the SYNC IN terminals.
2) Set the SYNC switch to ON, and then place the RECORD SELECT switch for TRK4 in the DIRECT position. Record signals on the TRK4.
3) Set the SYNC knob to its max. position and read the output level at the SYNC OUT terminals.
   It should be about −4 dBV.
   Reference: The overall frequency response is ±3 dB at 300 Hz ~ 3 kHz.

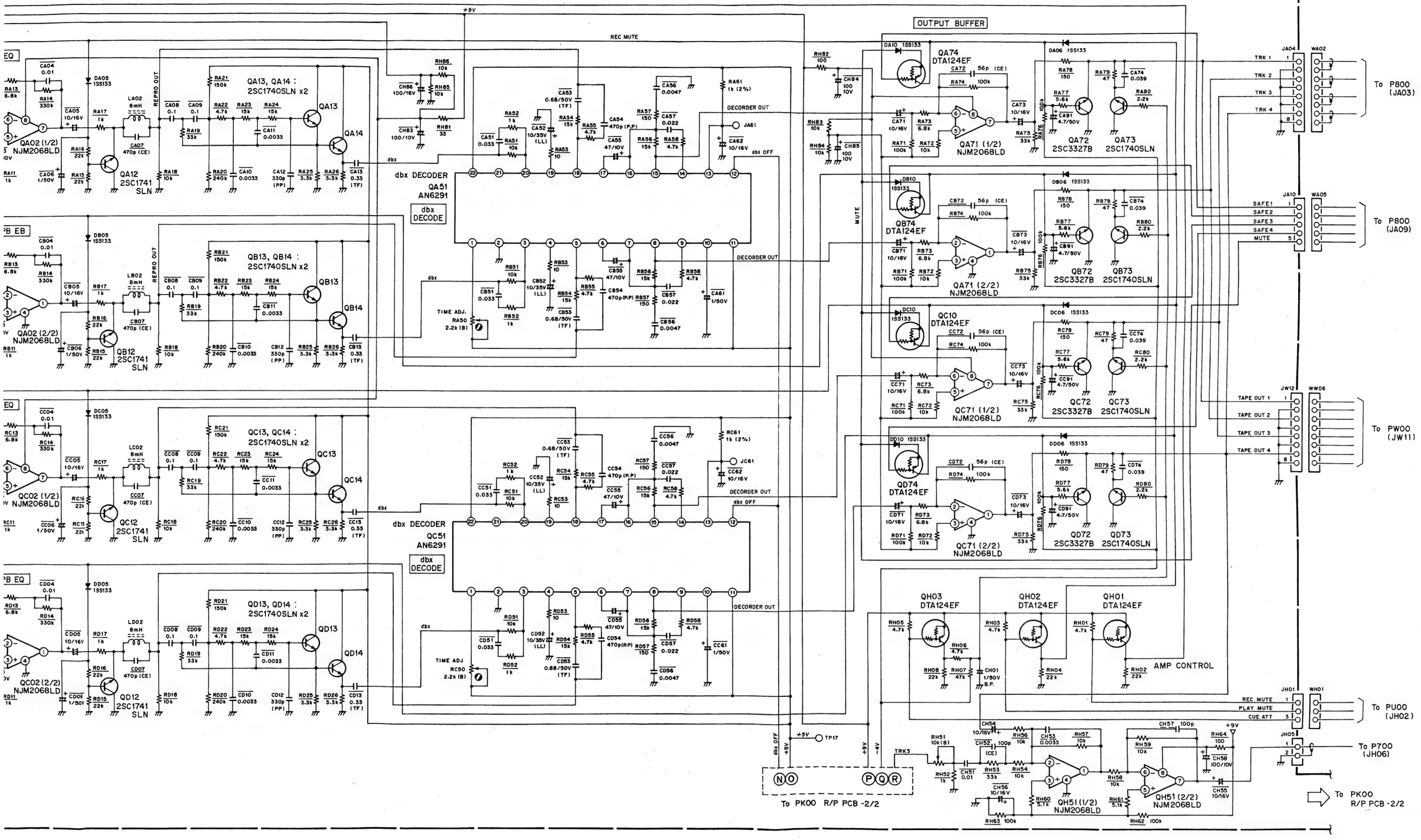
11. SCHEMATIC DIAGRAMS AND PARTS LOCATION (Pattern Side)



ɪ Side)


P800
CUE PCB
PK00
R/P PCB
PW00
IN/OUT PCB
P700
MIXER PCB
PV00
INPUT PCB
PV01
XLR PCB
WX01
JX02
WC02
JC03
EXT DC
J094
WC03
JC04
POWER SW
S001
JA03
TRK 1
TRK 2
TRK 3
TRK 4
WA02
JA04
JA01
REC 1
REC 2
REC 3
REC 4
WA01
JA02
JC01
BIAS 1
BIAS 2
BIAS 3
BIAS 4
−4V
SPEED
WC01
JC02
JB01
GND
GND
+9V
+5V
WB01
JB02
JA05
R
L
CUE
EFF
JA07
REC IN 1
REC IN 2
REC IN 3
REC IN 4
JB03
P. MUTE
GND
+9V
TRK
BUS
JA09
SAFE 1
SAFE2
SAFE3
SAFE4
MUTE
JB05
D. GND
+9V
P. MUTE
+5V
+12V
MUTE
JY01
SAFE1
SAFE2
SAFE3
SAFE4
SPEED
BIAS
READY
PIT1(O)
PIT2(O)
WA05
JA10
H/P 1
JN11
H/P 2
JN12
JH01
REC M.
PLAY M.
CUE ATT
JH05
JH11
JH12
JH13
TRK1
TRK2
TRK3
TRK4
R/P HEAD
TAPE OUT
E HEAD
JW41
JW42
LINE IN
JW51
JW52
JW53
JW54
JW61
JW62
SYNC
IN
OUT
JW71
L/MONO
EFF. RTN
JW72
JW81
EFF. SEND
JW82
TAPE CUE OUT
JW12
WW06
TAPE OUT 1
GND
TAPE OUT 2
GND
TAPE OUT 3
GND
TAPE OUT 4
GND
JW11
JN01
H/P 2
H/P 1
JH03
IN
+5V
OUT
JW01
WW01
LINE IN L
LINE IN R
JW02
JW03
WW02
TAPE OUT 1
TAPE OUT 2
TAPE OUT 3
TAPE OUT 4
JW04
JW05
WW03
SYNC IN
SYNC OUT
JW06
JW07
WW04
EFF L
EFF R
JW08
EFF R
EFF L
JW09
WW05
TAPE CUE
EFF. SEND
P. MUTE
JW10
TAPE CUE
EFF. SEND
S P. MUTE
WA04
JA08
REC OUT 1
REC OUT 2
REC OUT 3
REC OUT 4
WA03
JA06
R
L
CUE
EFF
WN01
JN02
HP 2
GND
HP 1
WH02
JH04
dbx
WB02
JB04
WH03
JH06
SYNC
JV11
WV01
JV01
CH 1
JV31
WV11
JV21
INS1
JV12
WV02
JV02
CH2
JV32
WV12
JV22
INS 2
JV13
WV03
JV03
CH3
JV33
WV13
JV23
INS3
JV14
WV04
JV04
CH4
JV34
WV14
JV24
INS4
JV15
WV05
JV05
CH5
CH6
JV41
MIC/LINE
INSERT
JV51
JV42
JV52
JV43
JV53
JV44
JV54
JV45
JV46
1
2
3
4
5
6
JV71
JV72
JV73
JV74
JV75
JV76
WV10
LINE IN L
LINE IN R
JV81
JV82
JV83
JV84
JV91
JV92
L
R
LINE IN


PK00 R/P PCB -1/2
REC/REPRO HEAD
HD01 (1/2)
TRK 1
TRK 2
JH11
TRK1
QA01 BA7755
PB EQ
QA02 (1/2) NJM2068LD
QA11 2SC1741SLN
QA12 2SC1741 SLN
QA13, QA14 : 2SC1740SLN x2
QA13
QA14
QA03 DTC124EF
TRK2
QB01 BA7755
PB EB
QB02 (2/2) NJM2068LD
QB11 2SC1741SLN
QB12 2SC1741 SLN
QB13, QB14 : 2SC1740SLN x2
QB13
QB14
QB03 DTC124EF
TRK3
QC01 BA7755
PB EQ
QC02 (1/2) NJM2068LD
QC11 2SC1741SLN
QC12 2SC1741 SLN
QC13, QC14 : 2SC1740SLN x2
QC13
QC14
QC03 DTC124EF
TRK4
QD01 BA7755
PB EQ
QD02 (2/2) NJM2068LD
QD11 2SC1741SLN
QD12 2SC1741 SLN
QD13, QD14 : 2SC1740SLN x2
QD13
QD14
QD03 DTC124EF
REC/REPRO HEAD
HD01 (2/2)
TRK 3
TRK 4
JH12
+9V
REC MUTE
dbx DECODER
QA51 AN6291
dbx DECODE
QC51 AN6291
dbx DECODE
DECORDER OUT
dbx OFF
TIME ADJ.
RA50 2.2k (B)
RC50 2.2k (B)
REC 1
REC 2
REC 3
REC 4
BIAS 1
BIAS 2
BIAS 3
BIAS 4
REC MUTE 1
REC MUTE 2
REC MUTE 3
REC MUTE 4
ABCD EFGH IJKL
To PK00 R/P PCB -2/2
MUTE
+5V
TP17
NO PQ
To PK00 R/P PCB -2/2


+9V
REC MUTE
OUTPUT BUFFER
EQ
QA02 (1/2) NJM2068LD
QA12 2SC1741 SLN
QA13, QA14 : 2SC1740SLN x2
QA13
QA14
REPRO OUT
dbx
dbx DECODER
QA51 AN6291
dbx DECODE
DECORDER OUT
dbx OFF
JA61
TIME ADJ. RA50 2.2k (B)
QA71 (1/2) NJM2068LD
QA74 DTA124EF
QA72 2SC3327B
QA73 2SC1740SLN
MUTE
QA71 (2/2) NJM2068LD
QB74 DTA124EF
QB72 2SC3327B
QB73 2SC1740SLN
QB02 (2/2) NJM2068LD
QB12 2SC1741 SLN
QB13, QB14 : 2SC1740SLN x2
QB13
QB14
QC02 (1/2) NJM2068LD
QC12 2SC1741 SLN
QC13, QC14 : 2SC1740SLN x2
QC13
QC14
QC51 AN6291
QC71 (1/2) NJM2068LD
QC10 DTA124EF
QC72 2SC3327B
QC73 2SC1740SLN
QC02 (2/2) NJM2068LD
QC12 2SC1741 SLN
QD13, QD14 : 2SC1740SLN x2
QD13
QD14
QD51 AN6291
QD71 (1/2) NJM2068LD
QD74 DTA124EF
QD72 2SC3327B
QD73 2SC1740SLN
QD02 (2/2) NJM2068LD
QD12 2SC1741 SLN
QH03 DTA124EF
QH02 DTA124EF
QH01 DTA124EF
AMP CONTROL
QH51 (1/2) NJM2068LD
QH71 (2/2) NJM2068LD
TRK3
+5V
TP17
dbx OFF
+8V
-4V
To PK00 R/P PCB -2/2
To P800 (JA03)
To P800 (JA09)
To PW00 (JW11)
To PU00 (JH02)
To P700 (JH06)
To PK00 R/P PCB -2/2
TRK 1
TRK 2
TRK 3
TRK 4
SAFE1
SAFE2
SAFE3
SAFE4
MUTE
TAPE OUT 1
TAPE OUT 2
TAPE OUT 3
TAPE OUT 4
REC MUTE
PLAY MUTE
CUE ATT

QJ11 QL01 QJ31 Q901
QE31 QE11~QG01 QG31 QF31
QH01~QH03 QA01~QD01 QA03~QD03 QA11~QD11

QC02 QG01
QA02 QE01

QJ12 QH21
QA12~QD12

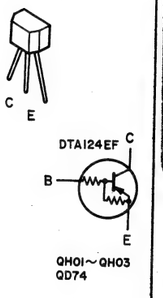
QG02 QE12~QG12 QE13~QG13 QJ13 QJ14 QJ15 QH11 QG03
QE02
QE14~QG14 QE15~QG15 QE03
QA13~QD13 QA14~QD14
QA51

QE16~QG16 QJ16
QE17~QG17 QJ17
QA71

QG51
QE51
QA72~QD72 QA73~QD73 QH51 QA74~QD74

QE71~QG71 QJ71

PK00 REC/PLAY AMP PCB



QA03 QB03
QC03 QD03
QH11 QH21

QH01~QH03
QD74

500055-00
R/P AMP PCB

QJ11 QL01 QJ31 Q901
QE31 QE11~QG01 QG31 QF31
QH01~QH03 QA01~QD01 QA03~QD03 QA11~QD11

QC02 QG01
QA02 QE01

QJ12 QH21
QA12~QD12

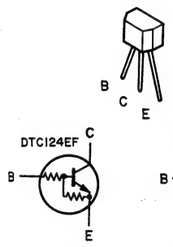
QG02 QE12~QG12 QE13~QG13 QJ13 QJ14 QJ15 QH11 QG03
QE02 QE14~QG14 QE15~QG15 QE03
QA13~QD13 QA14~QD14 QA51

QE16~QG16 QJ16
QE17~QG17 QJ17
QA71

QG51
QE51
QA72~QD72 QA73~QD73 QH51 QA74~QD74

QE71~QG71 QJ71

PK00 REC/PLAY AMP PCB

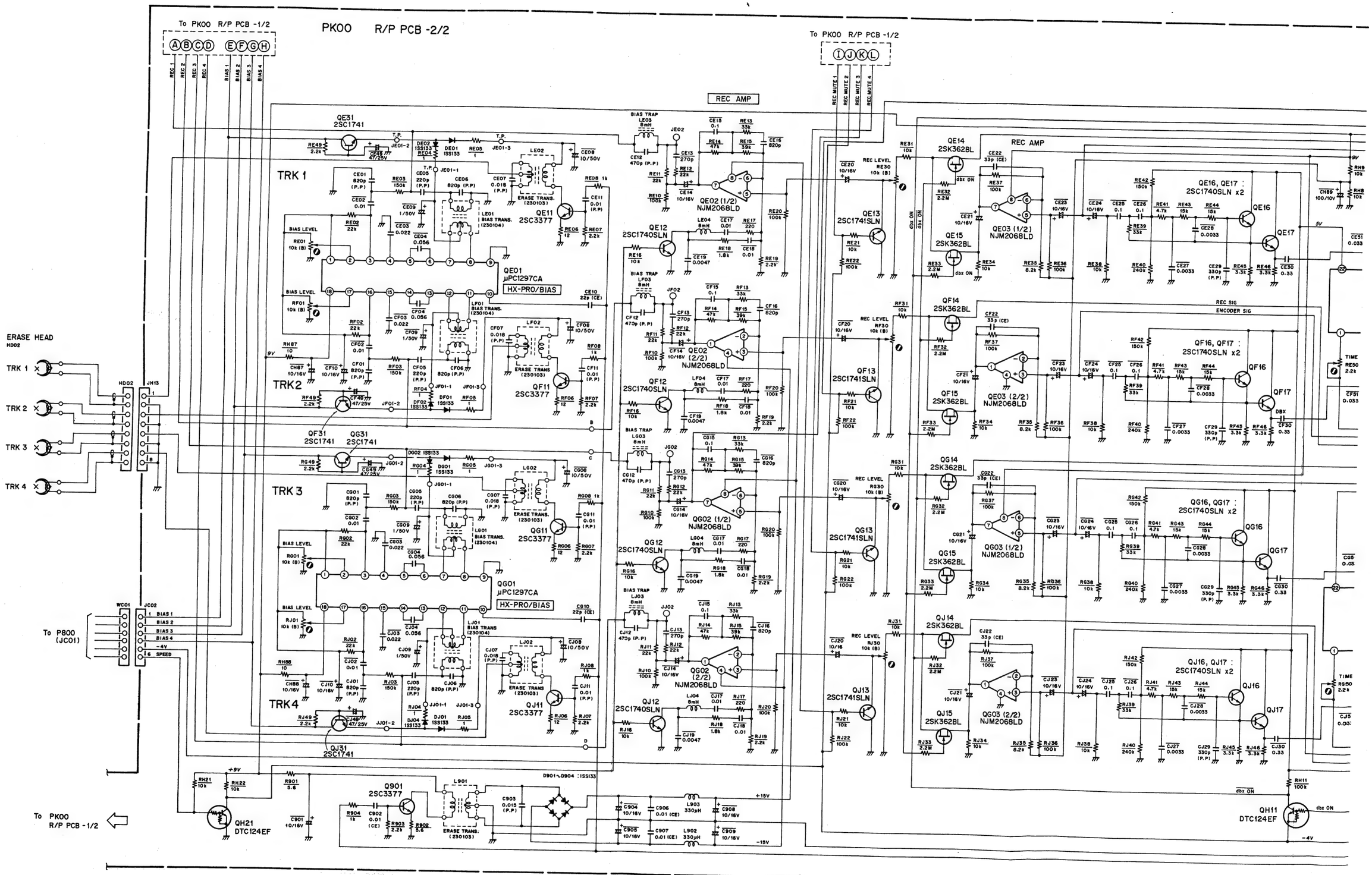


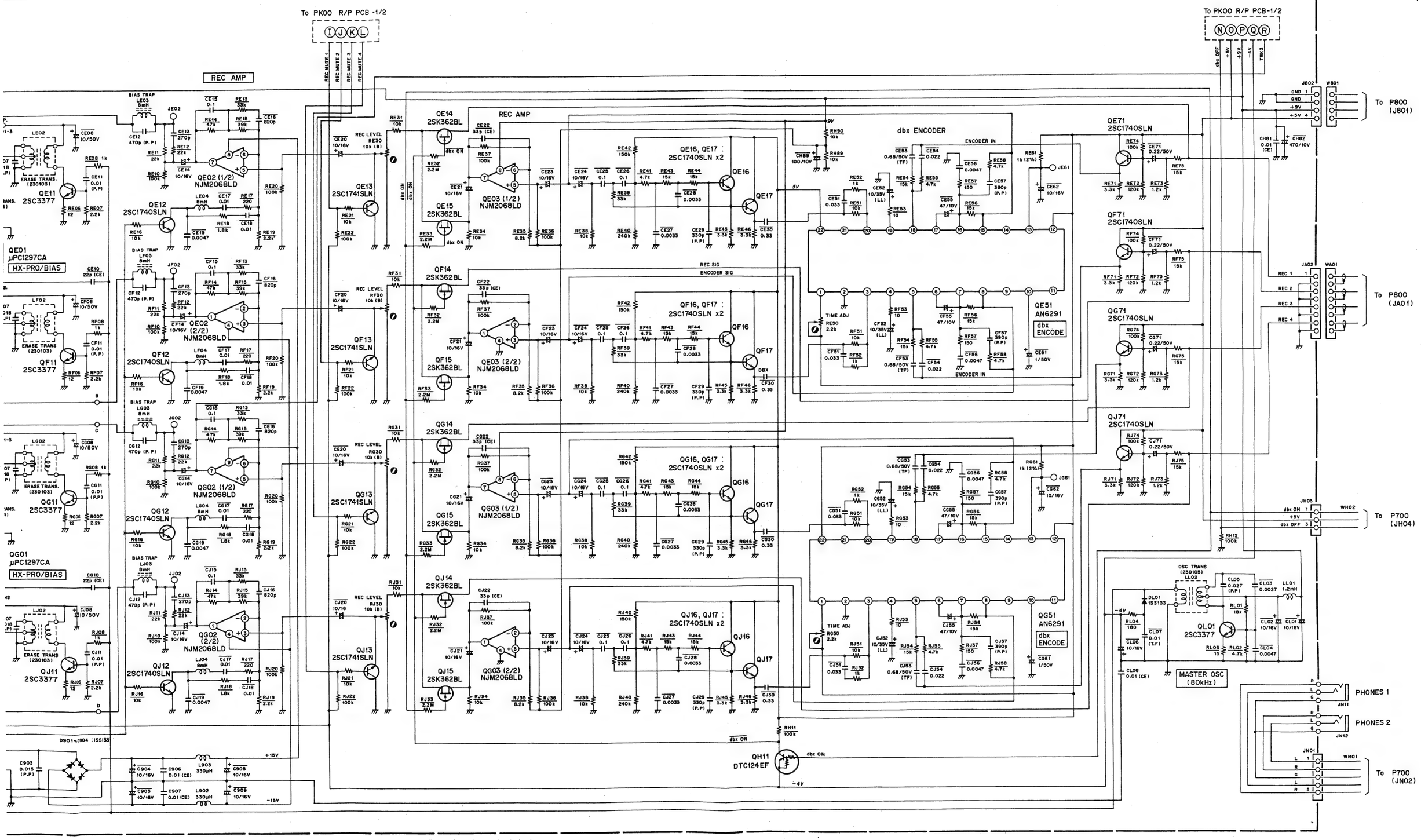
QA03 QB03
QC03 QD03
QH11 QH21

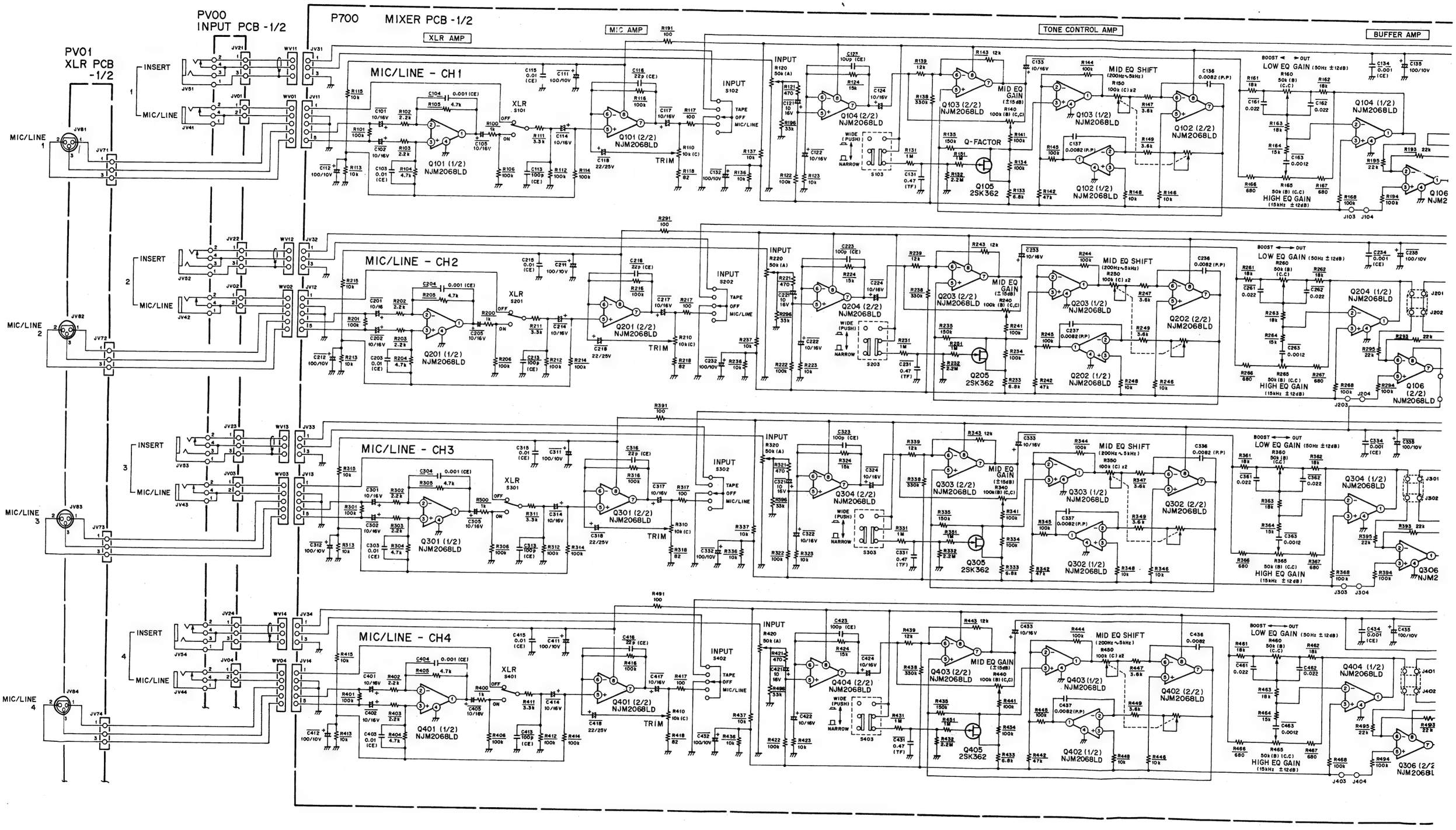
QH01~QH03
QD74

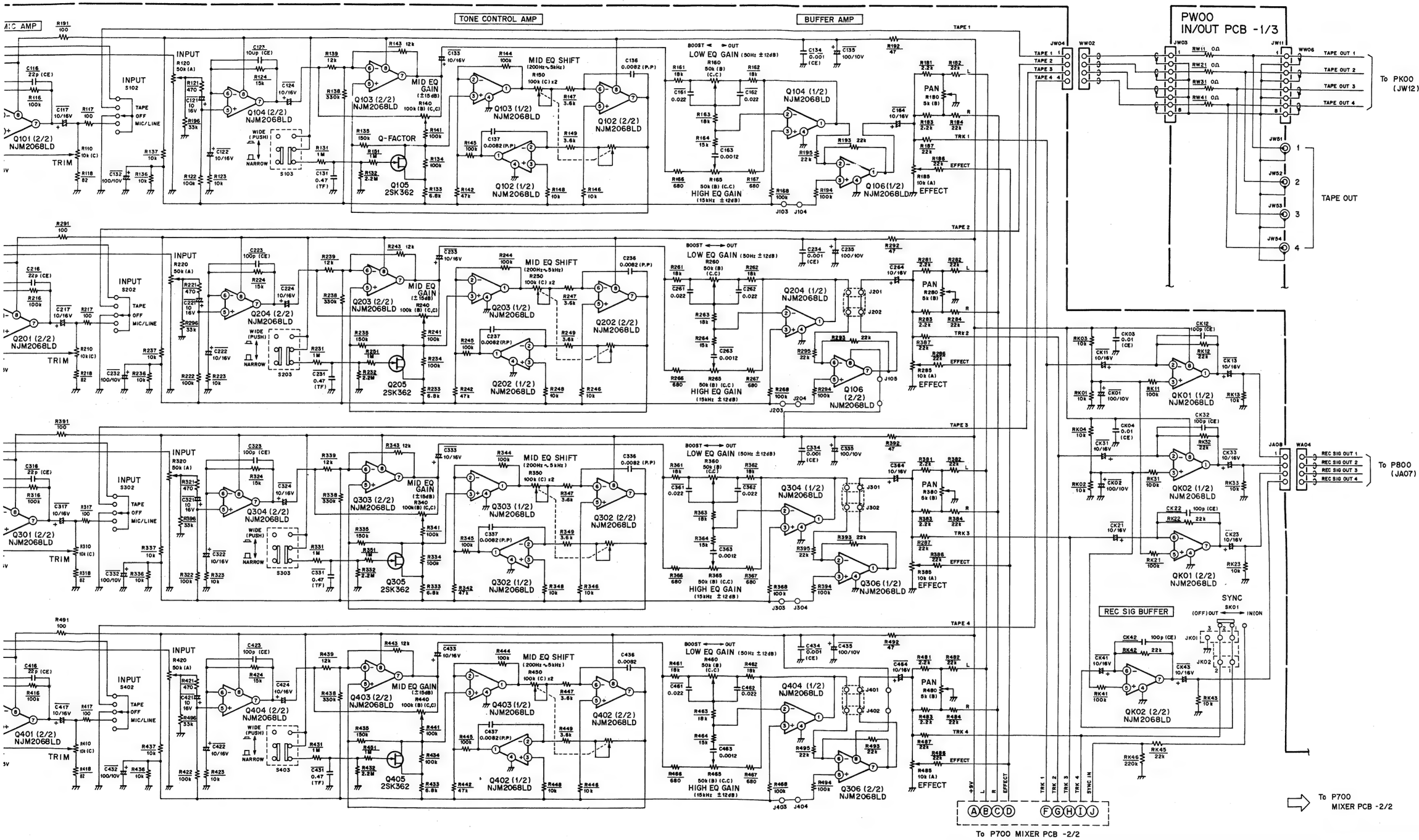
500055-00
R/P AMP PCB

PK00 R/P PCB -2/2

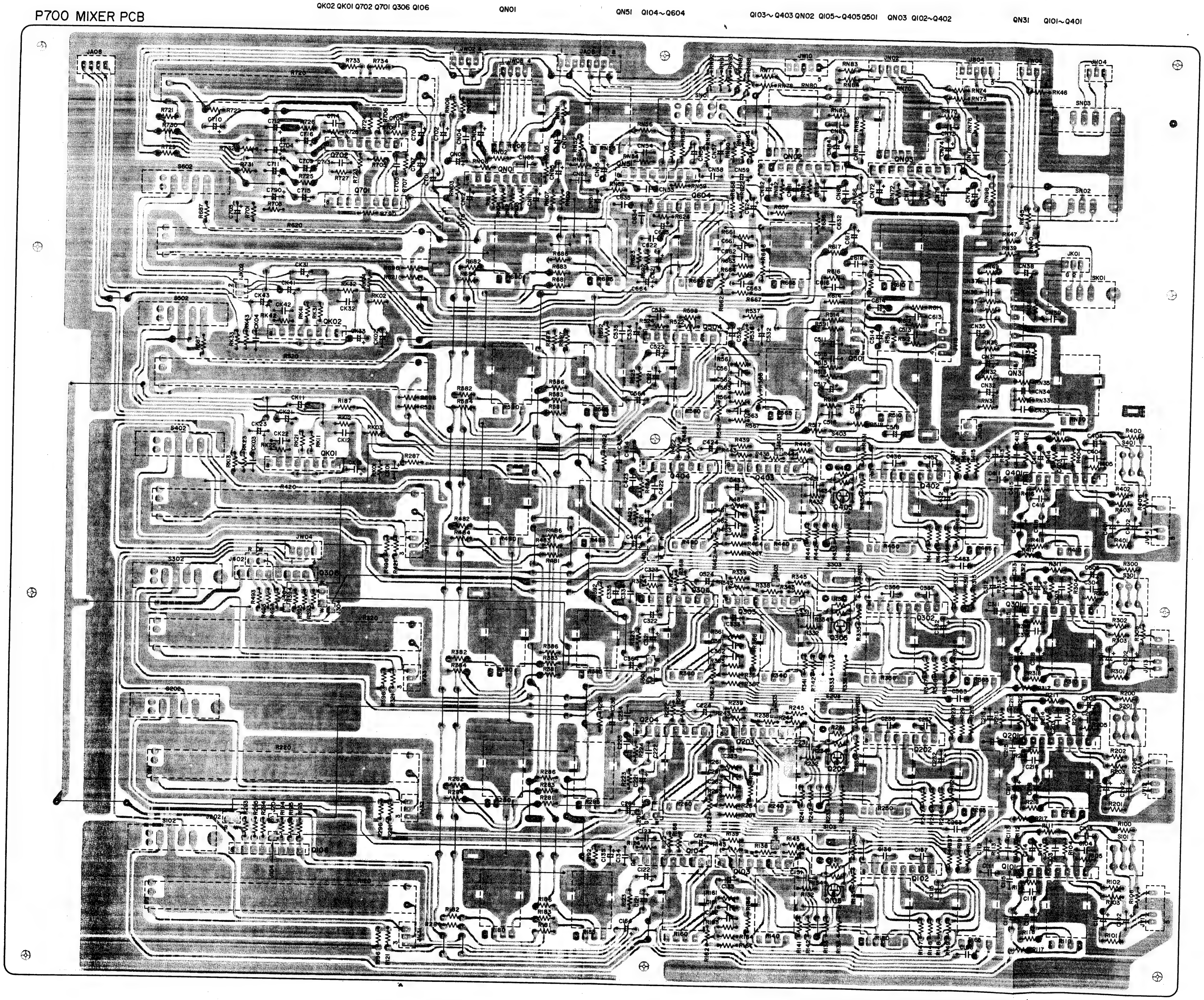


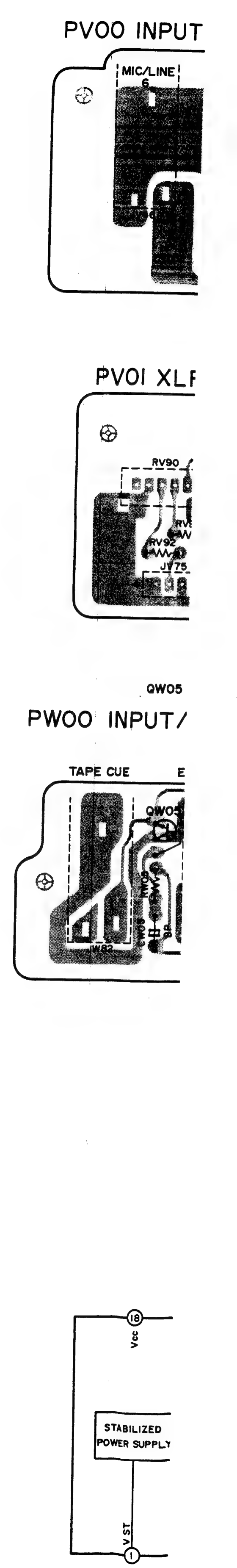

To PK00 R/P PCB -1/2
I J K L
REC MUTE 1
REC MUTE 2
REC MUTE 3
REC MUTE 4
REC AMP
BIAS TRAP
LE03 8mH
JE02
CE15 0.1
RE13 33k
RE14 47k
RE15 39k
CE16 820p
CE12 470p (P.P)
CE13 270p
RE12 22k
RE11 22k
CE14 10/16V
RE10 100k
QE02 (1/2)
NJM2068LD
LE02
CE08 10/50V
RE08 1k
CE11 0.01 (P.P)
ERASE TRANS. (230103)
QE11 2SC3377
RE06 12
RE07 2.2k
LE04 8mH
CE17 0.01
RE17 220
RE18 1.8k
CE18 0.01
CE19 0.0047
RE19 2.2k
RE20 100k
QE12 2SC1740SLN
RE16 10k
QE01 µPC1297CA
HX-PRO/BIAS
CE10 22p (CE)
BIAS TRAP
LF03 8mH
JF02
CF15 0.1
RF13 33k
RF14 47k
RF15 39k
CF16 820p
CF12 470p (P.P)
CF13 270p
RF12 22k
RF11 22k
CF14 10/16V
RF10 100k
QE02 (2/2)
NJM2068LD
LF02
CF08 10/50V
RF08 1k
CF11 0.01 (P.P)
ERASE TRANS (230103)
QF11 2SC3377
RF06 12
RF07 2.2k
LF04 8mH
CF17 0.01
RF17 220
RF18 1.8k
CF18 0.01
CF19 0.0047
RF19 2.2k
RF20 100k
QF12 2SC1740SLN
RF16 10k
QG01 µPC1297CA
HX-PRO/BIAS
CG10 22p (CE)
BIAS TRAP
LG03 8mH
JG02
CG15 0.1
RG13 33k
RG14 47k
RG15 39k
CG16 820p
CG12 470p (P.P)
CG13 270p
RG12 22k
RG11 22k
CG14 10/16V
RG10 100k
QG02 (1/2)
NJM2068LD
LG02
CG08 10/50V
RG08 1k
CG11 0.01 (P.P)
ERASE TRANS. (230103)
QG11 2SC3377
RG06 12
RG07 2.2k
LG04 8mH
CG17 0.01
RG17 220
RG18 1.8k
CG18 0.01
CG19 0.0047
RG19 2.2k
RG20 100k
QG12 2SC1740SLN
RG16 10k
QJ01 µPC1297CA
HX-PRO/BIAS
CJ10 22p (CE)
BIAS TRAP
LJ03 8mH
JJ02
CJ15 0.1
RJ13 33k
RJ14 47k
RJ15 39k
CJ16 820p
CJ12 470p (P.P)
CJ13 270p
RJ12 22k
RJ11 22k
CJ14 10/16V
RJ10 100k
QG02 (2/2)
NJM2068LD
LJ02
CJ08 10/50V
RJ08 1k
CJ11 0.01 (P.P)
ERASE TRANS (230103)
QJ11 2SC3377
RJ06 12
RJ07 2.2k
LJ04 8mH
CJ17 0.01
RJ17 220
RJ18 1.8k
CJ18 0.01
CJ19 0.0047
RJ19 2.2k
RJ20 100k
QJ12 2SC1740SLN
RJ16 10k
D901~D904 :1SS133
C903 0.015 (P.P)
C904 10/16V
C905 10/16V
C906 0.01 (CE)
C907 0.01 (CE)
L903 330µH
L902 330µH
C908 10/16V
C909 10/16V
+15V
-15V
REC LEVEL
RE30 10k (B)
RE31 10k
RE32 2.2M
RE33 2.2M
RE34 10k
RE35 8.2k
RE36 100k
RE37 100k
RE38 10k
RE39 33k
RE40 240k
RE41 4.7k
RE42 150k
RE43 15k
RE44 15k
RE45 3.3k
RE46 3.3k
CE20 10/16V
CE21 10/16V
CE22 33p (CE)
CE23 10/16V
CE24 10/16V
CE25 0.1
CE26 0.1
CE27 0.0033
CE28 0.0033
CE29 330p (P.P)
CE30 0.33
QE13 2SC1741SLN
RE21 10k
RE22 100k
QE14 2SK362BL
QE15 2SK362BL
QE16, QE17 : 2SC1740SLN x2
QE03 (1/2) NJM2068LD
QE16
QE17
dbx ON
REC LEVEL
RF30 10k (B)
RF31 10k
RF32 2.2M
RF33 2.2M
RF34 10k
RF35 8.2k
RF36 100k
RF37 100k
RF38 10k
RF39 33k
RF40 240k
RF41 4.7k
RF42 150k
RF43 15k
RF44 15k
RF45 3.3k
RF46 3.3k
CF20 10/16V
CF21 10/16V
CF22 33p (CE)
CF23 10/16V
CF24 10/16V
CF25 0.1
CF26 0.1
CF27 0.0033
CF28 0.0033
CF29 330p (P.P)
CF30 0.33
QF13 2SC1741SLN
RF21 10k
RF22 100k
QF14 2SK362BL
QF15 2SK362BL
QF16, QF17 : 2SC1740SLN x2
QE03 (2/2) NJM2068LD
QF16
QF17
DBX
REC LEVEL
RG30 10k (B)
RG31 10k
RG32 2.2M
RG33 2.2M
RG34 10k
RG35 8.2k
RG36 100k
RG37 100k
RG38 10k
RG39 33k
RG40 240k
RG41 4.7k
RG42 150k
RG43 15k
RG44 15k
RG45 3.3k
RG46 3.3k
CG20 10/16V
CG21 10/16V
CG22 33p (CE)
CG23 10/16V
CG24 10/16V
CG25 0.1
CG26 0.1
CG27 0.0033
CG28 0.0033
CG29 330p (P.P)
CG30 0.33
QG13 2SC1741SLN
RG21 10k
RG22 100k
QG14 2SK362BL
QG15 2SK362BL
QG16, QG17 : 2SC1740SLN x2
QG03 (1/2) NJM2068LD
QG16
QG17
REC LEVEL
RJ30 10k (B)
RJ31 10k
RJ32 2.2M
RJ33 2.2M
RJ34 10k
RJ35 8.2k
RJ36 100k
RJ37 100k
RJ38 10k
RJ39 33k
RJ40 240k
RJ41 4.7k
RJ42 150k
RJ43 15k
RJ44 15k
RJ45 3.3k
RJ46 3.3k
CJ20 10/16
CJ21 10/16V
CJ22 33p (CE)
CJ23 10/16V
CJ24 10/16V
CJ25 0.1
CJ26 0.1
CJ27 0.0033
CJ28 0.0033
CJ29 330p (P.P)
CJ30 0.33
QJ13 2SC1741SLN
RJ21 10k
RJ22 100k
QJ14 2SK362BL
QJ15 2SK362BL
QJ16, QJ17 : 2SC1740SLN x2
QG03 (2/2) NJM2068LD
QJ16
QJ17
dbx ON
QH11 DTC124EF
RH11 100k
-4V
9V
RH90 10k
CH89 100/10V
RH89 10k
5V
dbx ENCODER
ENCODER IN
CE53 0.68/50V (TF)
CE54 0.022
CE56 0.0047
RE58 4.7k
RE54 15k
RE55 4.7k
RE57 150
CE57 390p (P.P)
CE55 47/10V
RE56 15k
RE52 1k
CE52 10/35V (LL)
RE53 10
CE51 0.033
RE51 10k
RE61 1k (2%)
JE61
CE62 10/16V
REC SIG
ENCODER SIG
TIME ADJ
RE50 2.2k
RF53 10
CF52 10/35V (LL)
CF55 47/10V
RF56 15k
RF54 15k
RF55 4.7k
RF57 150
CF57 390p (P.P)
CF53 0.68/50V (TF)
CF54 0.022
CF56 0.0047
RF58 4.7k
CF51 0.033
RF51 10k
RF52 1k
QE51 AN6291
dbx ENCODE
CE61 1/50V
RG53 10
CG52 10/35V (LL)
CG55 47/10V
RG56 15k
RG54 15k
RG55 4.7k
RG57 150
CG57 390p (P.P)
CG53 0.68/50V (TF)
CG54 0.022
CG56 0.0047
RG58 4.7k
CG51 0.033
RG51 10k
RG52 1k
RG61 1k (2%)
JG61
CG62 10/16V
RJ53 10
CJ52 10/35V (LL)
CJ55 47/10V
RJ56 15k
RJ54 15k
RJ55 4.7k
RJ57 150
CJ57 390p (P.P)
CJ53 0.68/50V (TF)
CJ54 0.022
CJ56 0.0047
RJ58 4.7k
CJ51 0.033
RJ51 10k
RJ52 1k
QG51 AN6291
dbx ENCODE
CG61 1/50V
CH88 470/10V
CH81 0.01 (CE)
CH82 470/10V
RH12 100k
QE71 2SC1740SLN
RE74 100k
CE71 0.22/50V
RE75 15k
RE71 3.3k
RE72 120k
RE73 1.2k
QF71 2SC1740SLN
RF74 100k
CF71 0.22/50V
RF75 15k
RF71 3.3k
RF72 120k
RF73 1.2k
QG71 2SC1740SLN
RG74 100k
CG71 0.22/50V
RG75 15k
RG71 3.3k
RG72 120k
RG73 1.2k
QJ71 2SC1740SLN
RJ74 100k
CJ71 0.22/50V
RJ75 15k
RJ71 3.3k
RJ72 120k
RJ73 1.2k
OSC TRANS (230105)
LL02
CL05 0.027 (P.P)
CL03 0.0027
LL01 1.2mH
DL01 1SS133
RL01 (8k)
CL02 10/16V
CL01 10/16V
-4V
RL04 180
CL07 0.01 (T.F)
CL06 10/16V
CL08 0.01 (CE)
QL01 2SC3377
RL03 15
RL02 4.7k
CL04 0.0047
MASTER OSC (80kHz)
dbx OFF
+5V
+9V
-9V
TRK3
JB02
WB01
GND
GND
+9V
+5V
To P800 (JB01)
JA02
WA01
REC 1
REC 2
REC 3
REC 4
To P800 (JA01)
JH03
WH02
dbx ON
+5V
dbx OFF
To P700 (JH04)
PHONES 1
JN11
PHONES 2
JN12
JN01
WN01
To P700 (JN02)
To PK00 R/P PCB-1/2
N O P Q R

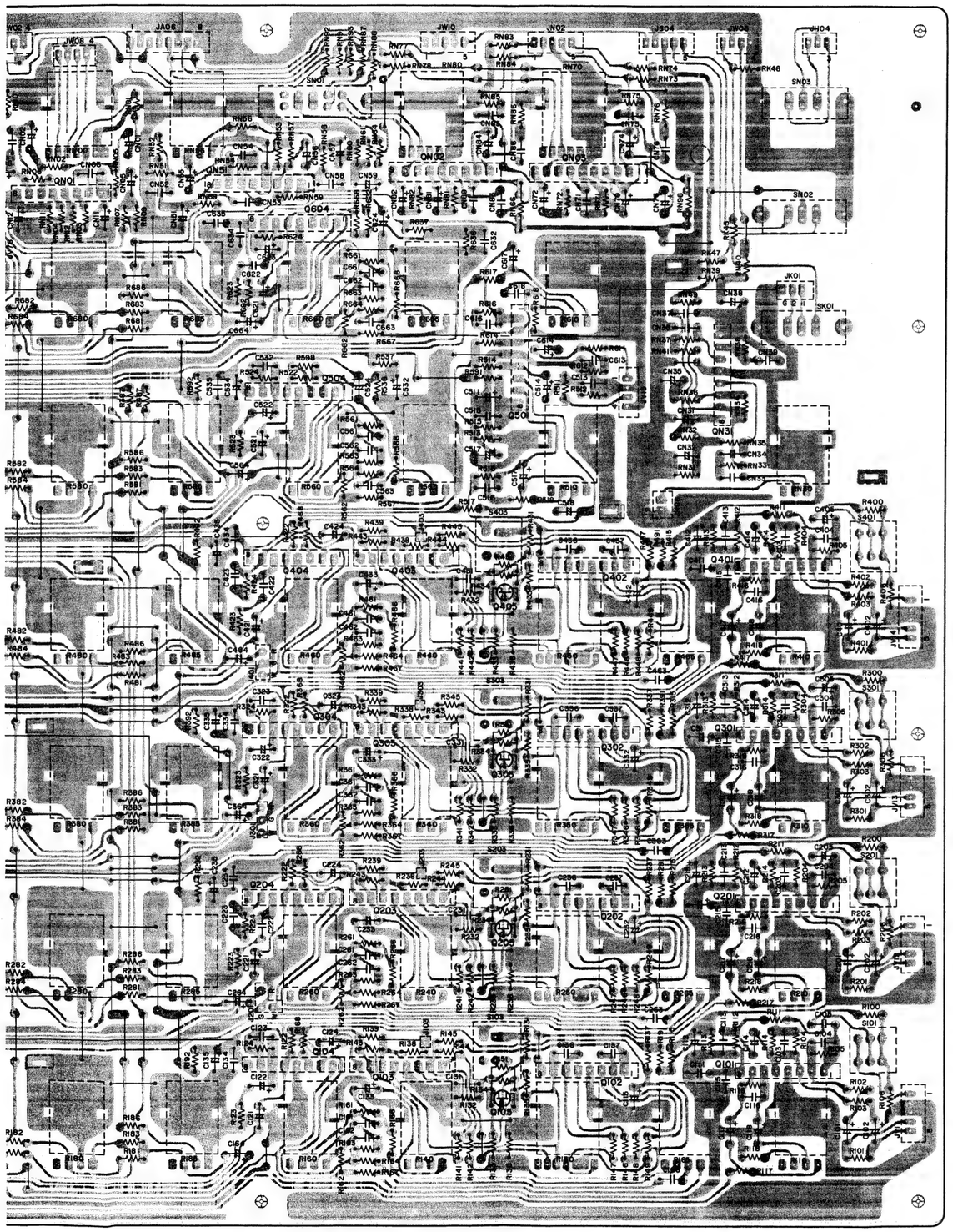

PV00
INPUT PCB -1/2
P700 MIXER PCB -1/2
PV01
XLR PCB
-1/2
XLR AMP
MIC AMP
TONE CONTROL AMP
BUFFER AMP
INSERT
MIC/LINE
MIC/LINE - CH1
MIC/LINE - CH2
MIC/LINE - CH3
MIC/LINE - CH4
Q101 (1/2) NJM2068LD
Q101 (2/2) NJM2068LD
Q201 (1/2) NJM2068LD
Q201 (2/2) NJM2068LD
Q301 (1/2) NJM2068LD
Q301 (2/2) NJM2068LD
Q401 (1/2) NJM2068LD
Q401 (2/2) NJM2068LD
Q104 (2/2) NJM2068LD
Q204 (2/2) NJM2068LD
Q304 (2/2) NJM2068LD
Q404 (2/2) NJM2068LD
Q103 (2/2) NJM2068LD
Q203 (2/2) NJM2068LD
Q303 (2/2) NJM2068LD
Q403 (2/2) NJM2068LD
Q103 (1/2) NJM2068LD
Q203 (1/2) NJM2068LD
Q303 (1/2) NJM2068LD
Q403 (1/2) NJM2068LD
Q102 (2/2) NJM2068LD
Q202 (2/2) NJM2068LD
Q302 (2/2) NJM2068LD
Q402 (2/2) NJM2068LD
Q102 (1/2) NJM2068LD
Q202 (1/2) NJM2068LD
Q302 (1/2) NJM2068LD
Q402 (1/2) NJM2068LD
Q104 (1/2) NJM2068LD
Q204 (1/2) NJM2068LD
Q304 (1/2) NJM2068LD
Q404 (1/2) NJM2068LD
Q105 2SK362
Q205 2SK362
Q305 2SK362
Q405 2SK362
Q106 (2/2) NJM2068LD
MID EQ GAIN
MID EQ SHIFT
Q-FACTOR
LOW EQ GAIN
HIGH EQ GAIN
INPUT
TRIM
XLR
TAPE
MIC/LINE
WIDE (PUSH) NARROW
BOOST OUT


TONE CONTROL AMP
BUFFER AMP
MIC AMP
INPUT
TRIM
TAPE
OFF
MIC/LINE
WIDE (PUSH) NARROW
Q-FACTOR
MID EQ GAIN (±15dB)
MID EQ SHIFT (200Hz~5kHz)
LOW EQ GAIN (50Hz ±12dB)
HIGH EQ GAIN (15kHz ±12dB)
BOOST ◄► OUT
PAN
EFFECT
TAPE 1
TAPE 2
TAPE 3
TAPE 4
TRK 1
TRK 2
TRK 3
TRK 4
Q101 (2/2) NJM2068LD
Q104 (2/2) NJM2068LD
Q103 (2/2) NJM2068LD
Q103 (1/2) NJM2068LD
Q102 (2/2) NJM2068LD
Q102 (1/2) NJM2068LD
Q105 2SK362
Q104 (1/2) NJM2068LD
Q106(1/2) NJM2068LD
Q201 (2/2) NJM2068LD
Q204 (2/2) NJM2068LD
Q203 (2/2) NJM2068LD
Q203 (1/2) NJM2068LD
Q202 (2/2) NJM2068LD
Q202 (1/2) NJM2068LD
Q205 2SK362
Q204 (1/2) NJM2068LD
Q106 (2/2) NJM2068LD
Q301 (2/2) NJM2068LD
Q304 (2/2) NJM2068LD
Q303 (2/2) NJM2068LD
Q303 (1/2) NJM2068LD
Q302 (2/2) NJM2068LD
Q302 (1/2) NJM2068LD
Q305 2SK362
Q304 (1/2) NJM2068LD
Q306 (1/2) NJM2068LD
Q401 (2/2) NJM2068LD
Q404 (2/2) NJM2068LD
Q403 (2/2) NJM2068LD
Q403 (1/2) NJM2068LD
Q402 (2/2) NJM2068LD
Q402 (1/2) NJM2068LD
Q405 2SK362
Q404 (1/2) NJM2068LD
Q306 (2/2) NJM2068LD
S101
S102
S202
S302
S402
S103
S203
S303
S403
J103 J104
J203 J204
J303 J304
J403 J404
J201 J202
J301 J302
J401 J402
J105
PW00 IN/OUT PCB -1/3
TAPE OUT 1
TAPE OUT 2
TAPE OUT 3
TAPE OUT 4
To PK00 (JW12)
TAPE OUT
QK01 (1/2) NJM2068LD
QK02 (1/2) NJM2068LD
QK01 (2/2) NJM2068LD
QK02 (2/2) NJM2068LD
REC SIG BUFFER
SYNC
REC SIG OUT 1
REC SIG OUT 2
REC SIG OUT 3
REC SIG OUT 4
To P800 (JA07)
To P700 MIXER PCB -2/2
To P700 MIXER PCB -2/2

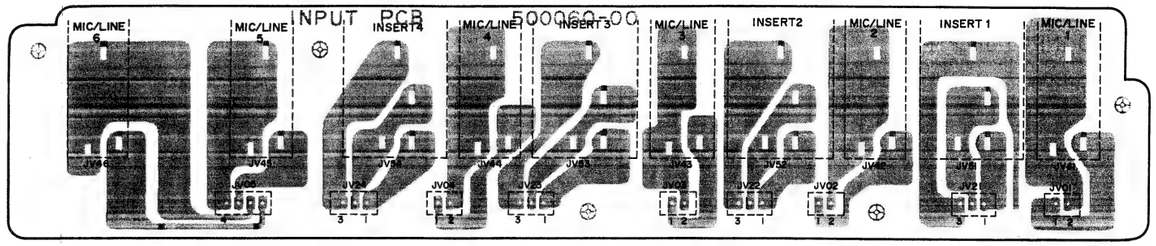
P700 MIXER PCB



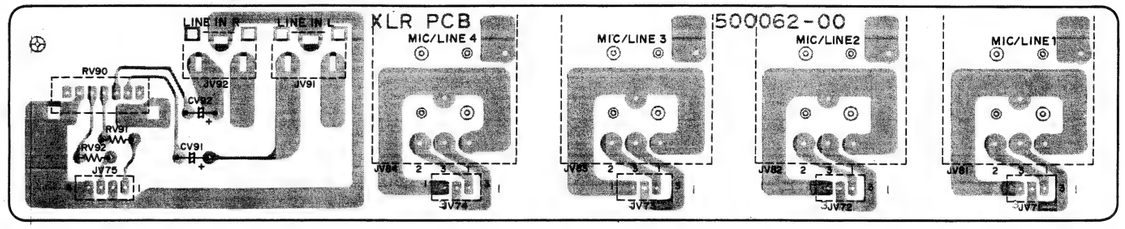




PV00 INPUT JACK PCB

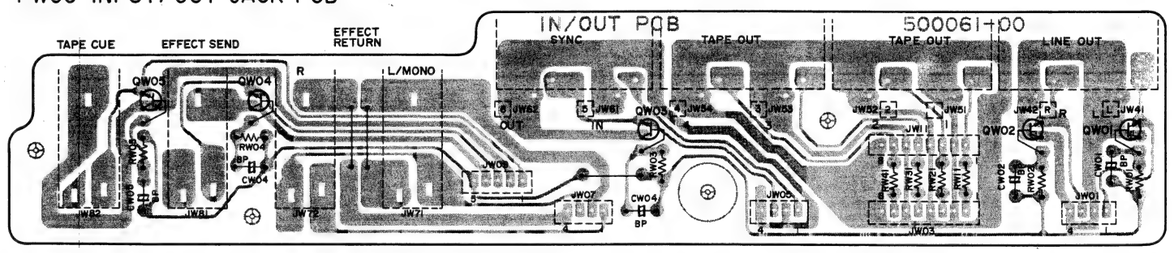


PV01 XLR JACK PCB

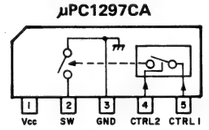


QW05 QW04 QW03 QW02 QW01

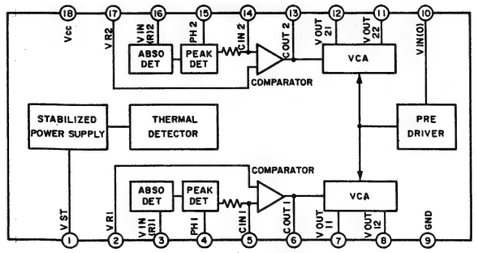
PW00 INPUT/OUT JACK PCB



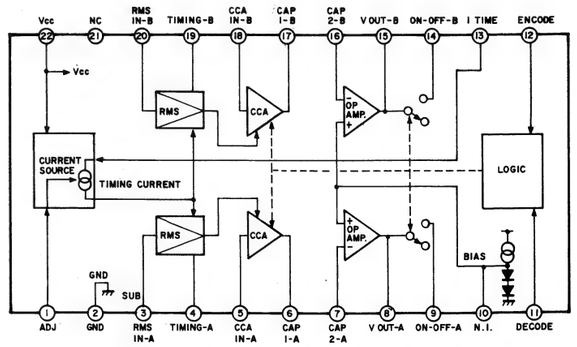
µPC1297CA



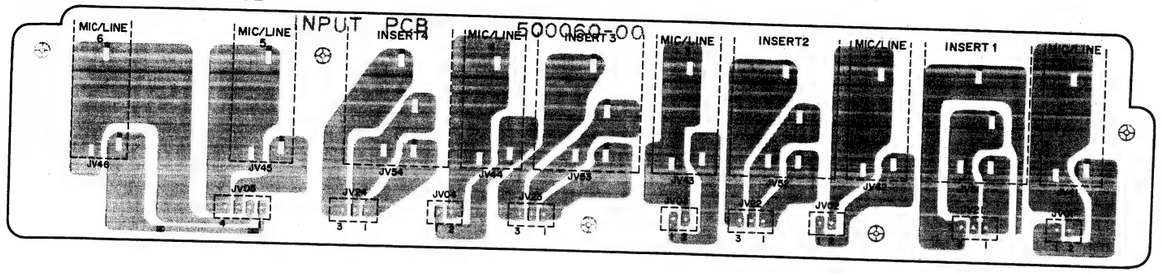
BA7755A



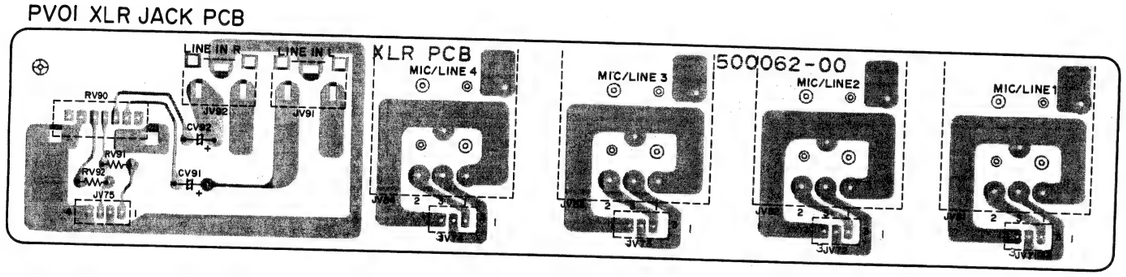
AN6291



PVOO INPUT JACK PCB

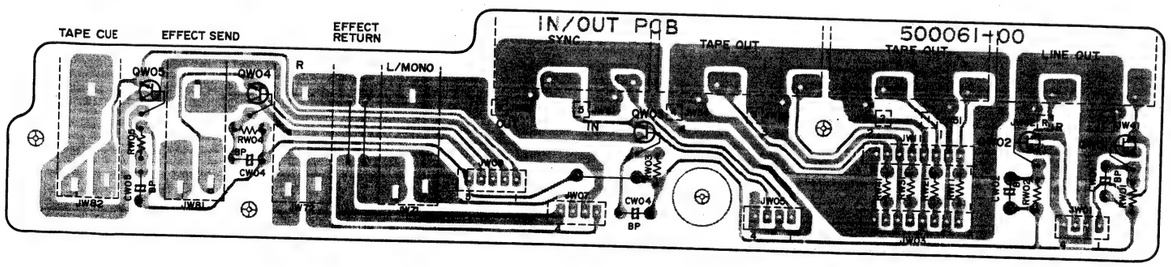


PVOI XLR JACK PCB



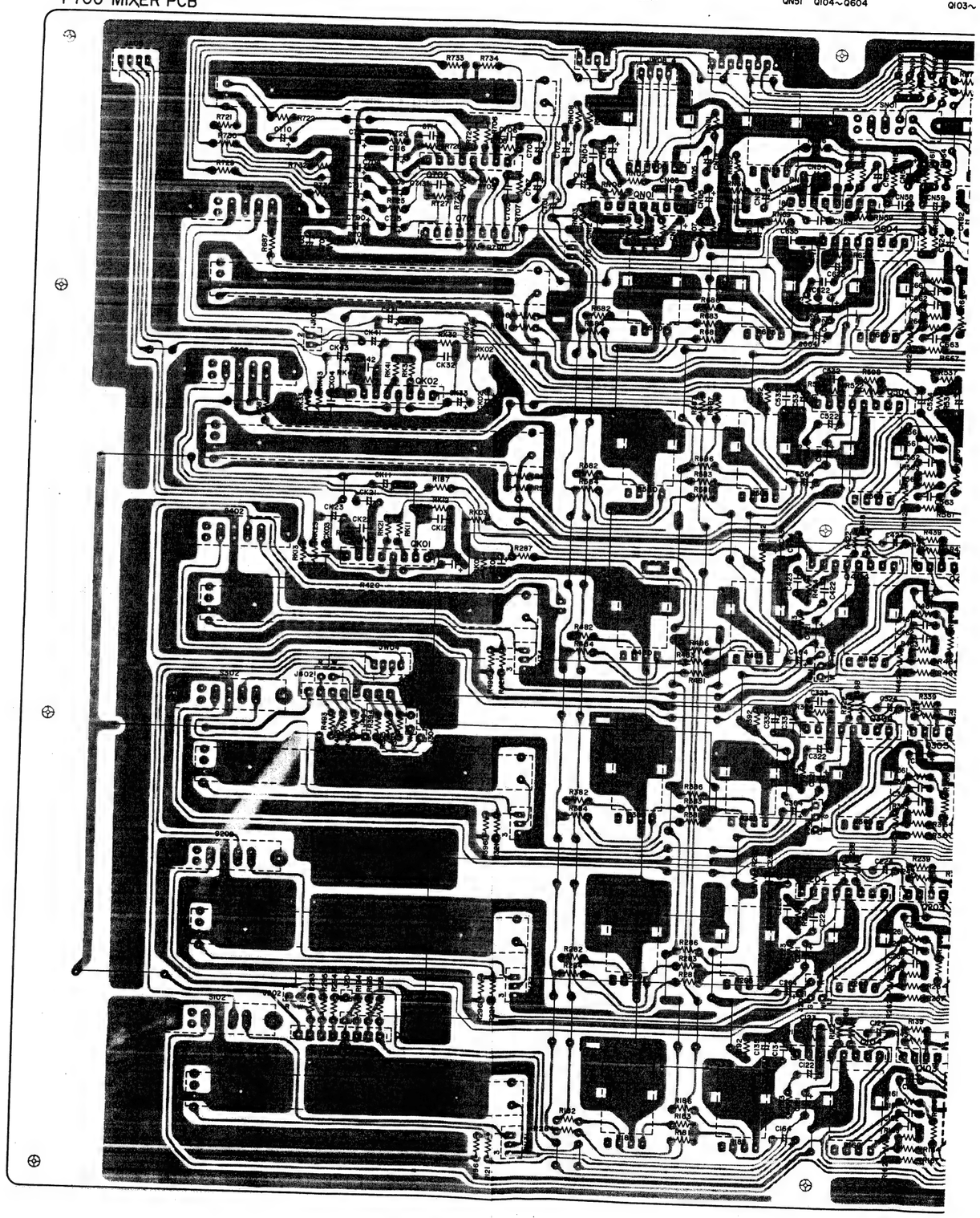
QWO5 QWO4 QWO3 QWO2 QWOI

PWOO INPUT/OUT JACK PCB



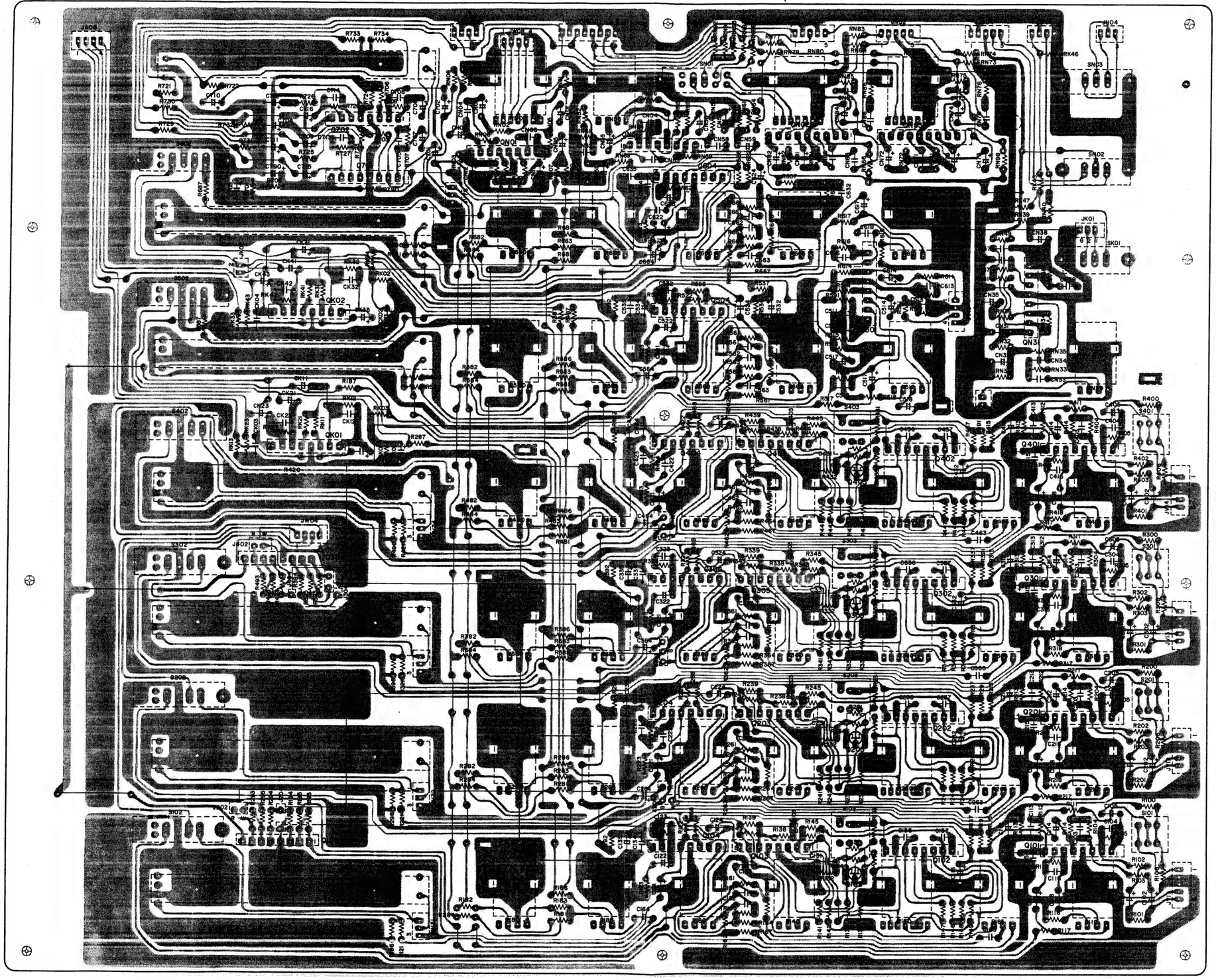
P700 MIXER PCB

QK02 QKOI Q702 Q701 Q306 QI06 QNOI QN5I QI04~Q604 QI03~



QK02 QK01 Q702 Q701 Q306 QI06 QN01 QN51 QI04~Q604 QI03~Q403 QN02 QI05~Q405 Q501 QN03 QI02~Q402 QN31 QI01~Q401

P700 MIXER PCB



P700 MIXER PCB -2/2

MIC AMP

TONE CONTROL AMP

MIC/LINE - CH5

MIC/LINE - CH6

To P700 MIXER PCB -1/2

PV00
INPUT PCB -2/2

MIC/LINE 5

MIC/LINE 6

PV01
XLR PCB -2/2

LINE IN

PW00
IN/OUT PCB -3/3

L/MONO

EFFECT RETURN

To P700 MIXER PCB 1/2

Q501 (2/2) NJM2068LD

Q501 (1/2) NJM2068LD

Q504 (2/2) NJM2068LD

Q504 (1/2) NJM2068LD

Q604 (2/2) NJM2068LD

Q604 (1/2) NJM2068LD

QN01 (2/2) NJM2068LD

QN01 (1/2) NJM2068LD

QN51 (2/2) NJM2068LD

Q702 (1/2 NJM2068L

Q701 (1/ NJM2068

D. ASSIGN

INPUT

TRIM

LOW EQ GAIN

HIGH EQ GAIN

PAN

EFFECT

EFFECT RETURN

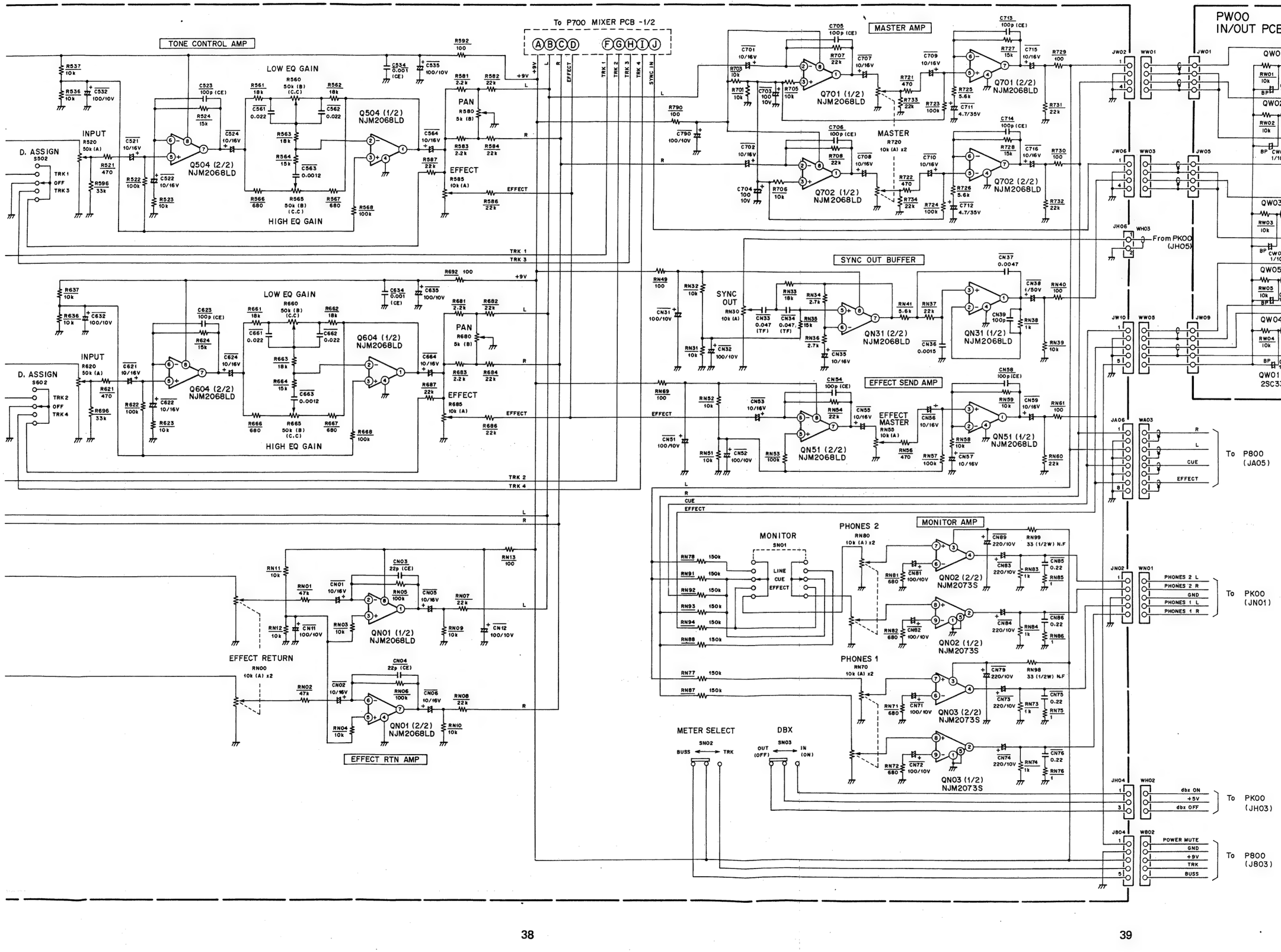
EFFECT RTN AMP

SYNC OUT

MONITOR

METER SELECT

DBX


TONE CONTROL AMP
LOW EQ GAIN
HIGH EQ GAIN
INPUT
D. ASSIGN
S502
TRK 1
OFF
TRK 3
Q504 (2/2)
NJM2068LD
Q504 (1/2)
NJM2068LD
PAN
EFFECT
To P700 MIXER PCB -1/2
A B C D
F G H I J
TRK 1
TRK 2
TRK 3
TRK 4
SYNC IN
+9V
L
R
EFFECT
MASTER AMP
MASTER
Q701 (1/2)
NJM2068LD
Q701 (2/2)
NJM2068LD
Q702 (1/2)
NJM2068LD
Q702 (2/2)
NJM2068LD
PW00
IN/OUT PCB -2/3
QW01
QW02
QW03
QW04
QW05
QW01 ~ QW05 :
2SC3327A
LINE OUT
SYNC
TAPE CUE
EFFECT SEND
From PK00
(JH05)
SYNC OUT BUFFER
SYNC
OUT
QN31 (2/2)
NJM2068LD
QN31 (1/2)
NJM2068LD
EFFECT SEND AMP
EFFECT
MASTER
QN51 (2/2)
NJM2068LD
QN51 (1/2)
NJM2068LD
To P800
(JA05)
Q604 (2/2)
NJM2068LD
Q604 (1/2)
NJM2068LD
MONITOR
SN01
LINE
CUE
EFFECT
PHONES 2
PHONES 1
MONITOR AMP
QN02 (2/2)
NJM2073S
QN02 (1/2)
NJM2073S
QN03 (2/2)
NJM2073S
QN03 (1/2)
NJM2073S
To PK00
(JN01)
METER SELECT
SN02
BUSS
TRK
DBX
SN03
OUT
(OFF)
IN
(ON)
dbx ON
+5V
dbx OFF
To PK00
(JH03)
POWER MUTE
GND
+9V
TRK
BUSS
To P800
(J803)
QN01 (1/2)
NJM2068LD
QN01 (2/2)
NJM2068LD
EFFECT RETURN
EFFECT RTN AMP
CUE

PU00 CPU PCB

LAMP DRIVE

LOGIC BLOCK

QU01 μ-COM HD614081SD45

REC CONT

DISPLAY DRIVE

MOTOR DRIVE

±10% SPEED CONTROL

To PX00 (JZ01)

To PK00 (JH01)

To PD00 (JM02)

To PS00 (JS01)

To PS00 (JS05)

To PS00 (JS03)

To P800 (JY01)

To P800 (J805)

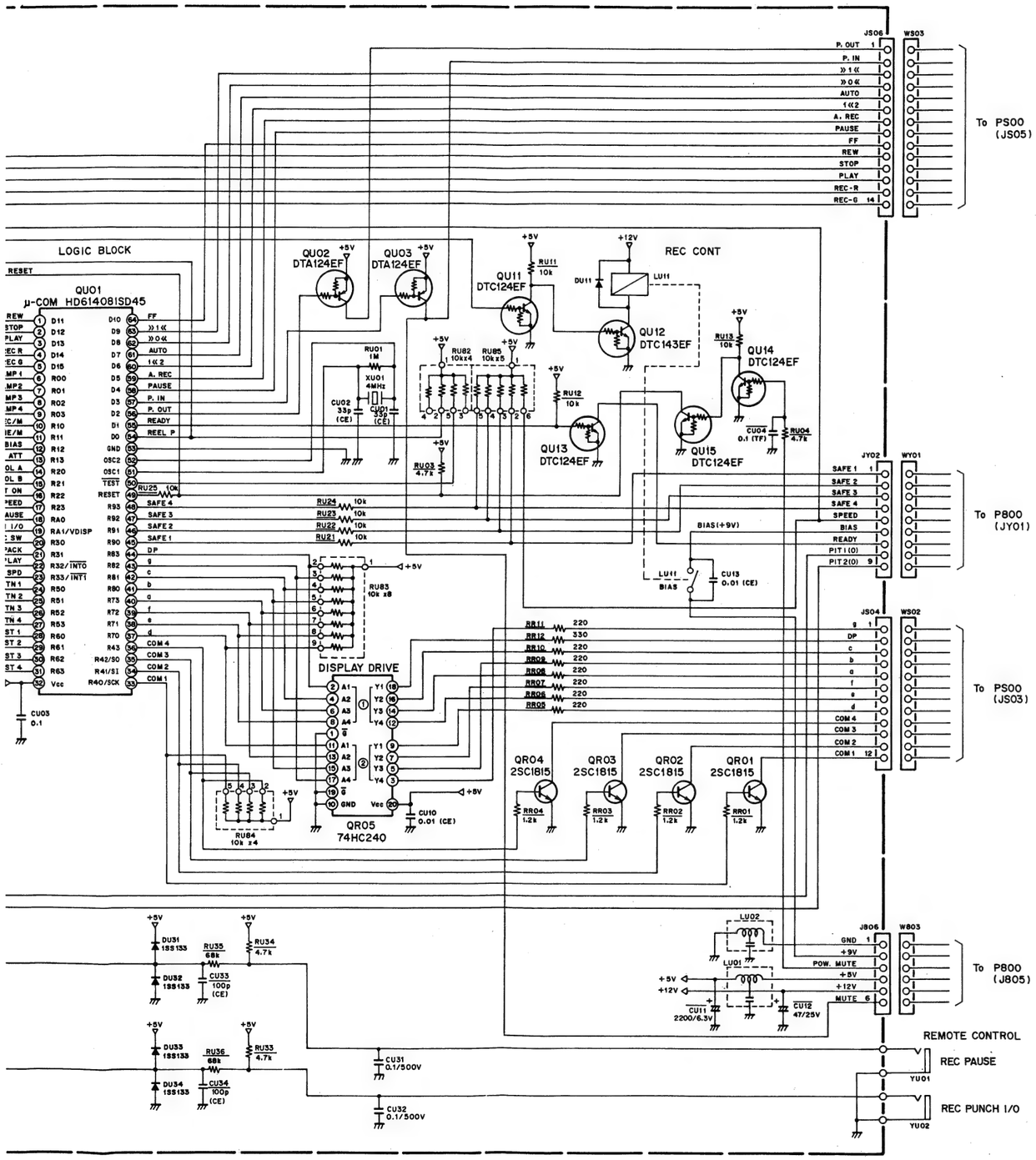
To MECHA

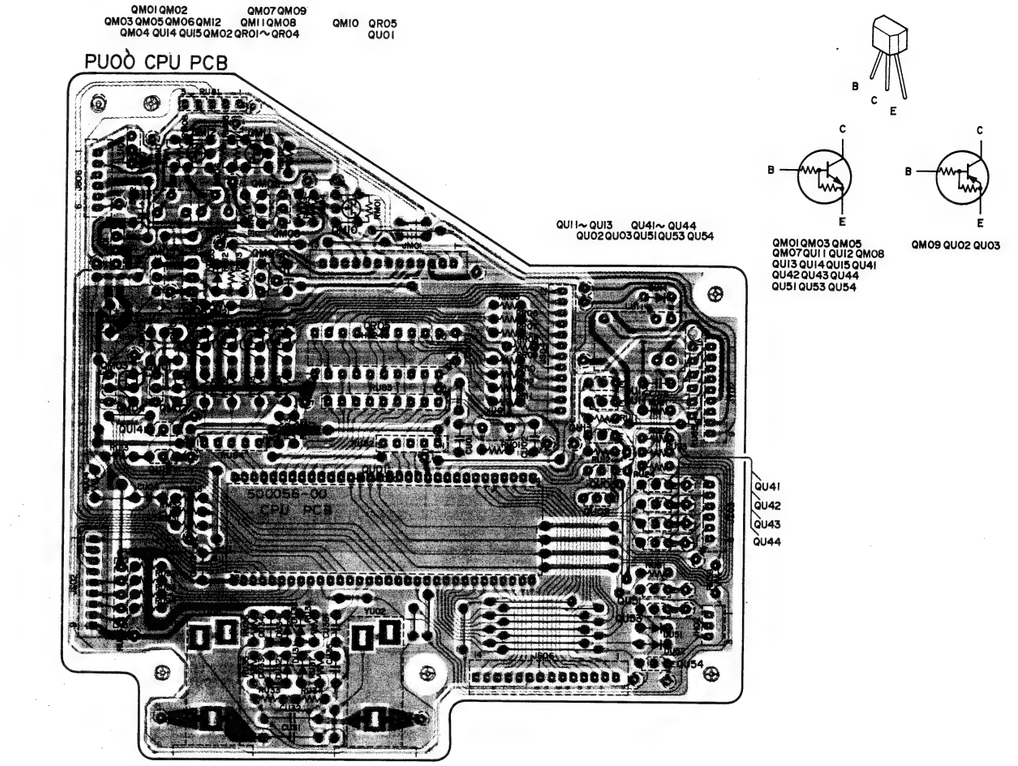
REMOTE CONTROL

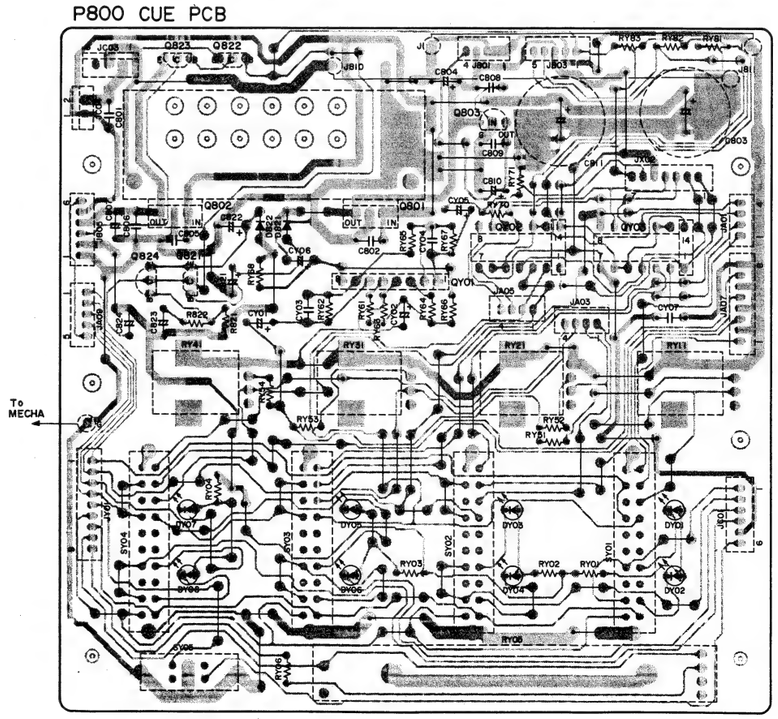
REC PAUSE

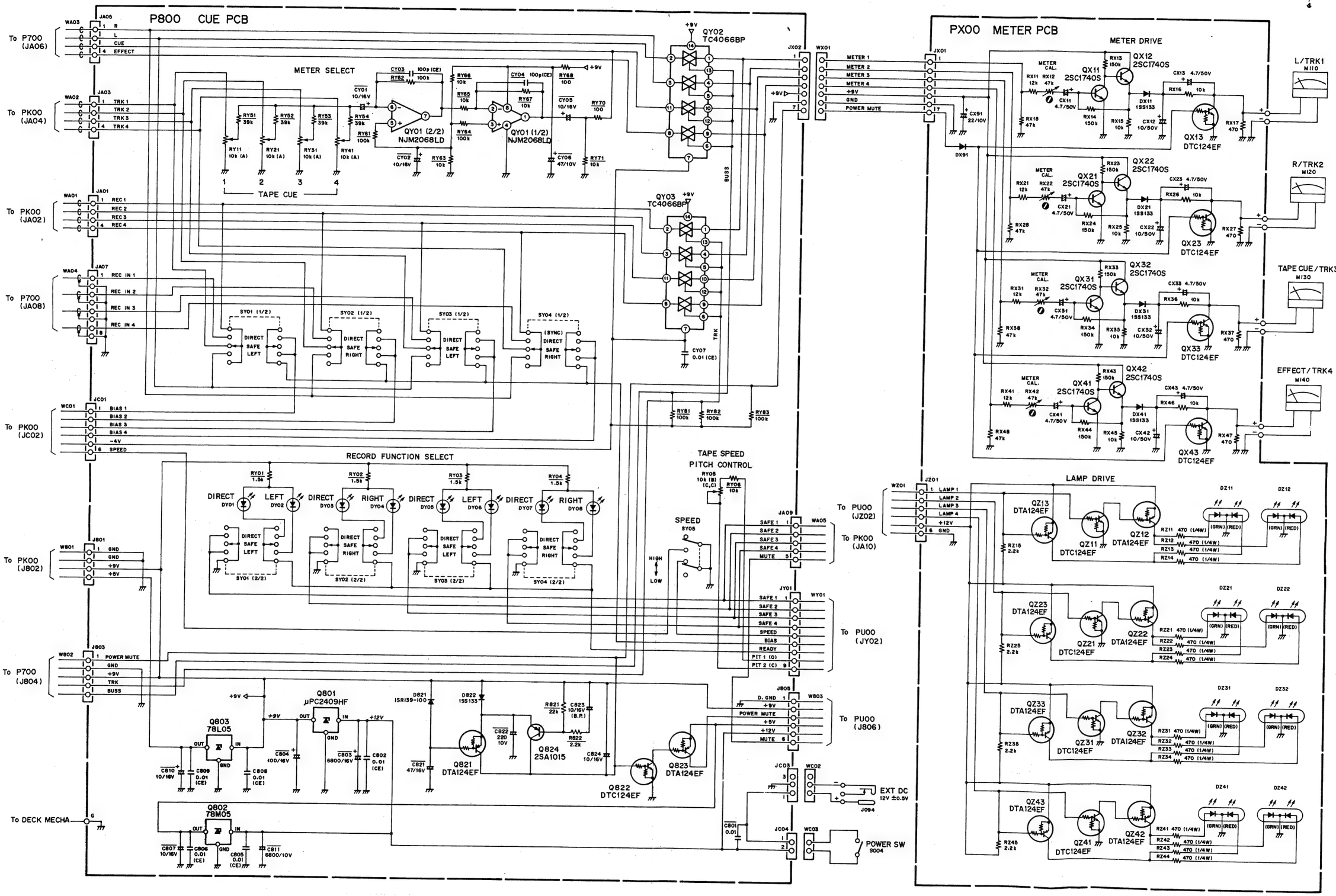
REC PUNCH I/O

P800


LOGIC BLOCK
RESET
QU01
μ-COM HD61408ISD45
JS06
WS03
P. OUT
P. IN
AUTO
A. REC
PAUSE
FF
REW
STOP
PLAY
REC-R
REC-G
To PS00 (JS05)
QU02 DTA124EF
QU03 DTA124EF
QU11 DTC124EF
QU12 DTC143EF
REC CONT
QU13 DTC124EF
QU14 DTC124EF
QU15 DTC124EF
XU01 4MHz
JY02
WY01
SAFE 1
SAFE 2
SAFE 3
SAFE 4
SPEED
BIAS
READY
To P800 (JY01)
BIAS(+9V)
DISPLAY DRIVE
QR05 74HC240
QR04 2SC1815
QR03 2SC1815
QR02 2SC1815
QR01 2SC1815
JS04
WS02
To PS00 (JS03)
J805
W803
GND
+9V
POW. MUTE
+5V
+12V
MUTE
To P800 (J805)
REMOTE CONTROL
REC PAUSE
REC PUNCH I/O
YU01
YU02


QM01 QM02
QM03 QM05 QM06 QM12
QM04 QU14 QU15 QM02 QR01~QR04
QM07 QM09
QM11 QM08
QM10
QR05
QU01
PUOÒ CPU PCB
QU01~QU03 QU41~QU44
QU02 QU03 QU51 QU53 QU54
QU41
QU42
QU43
QU44
QM01 QM03 QM05
QM07 QU11 QU12 QM08
QU13 QU14 QU15 QU41
QU42 QU43 QU44
QU51 QU53 QU54
QM09 QU02 QU03

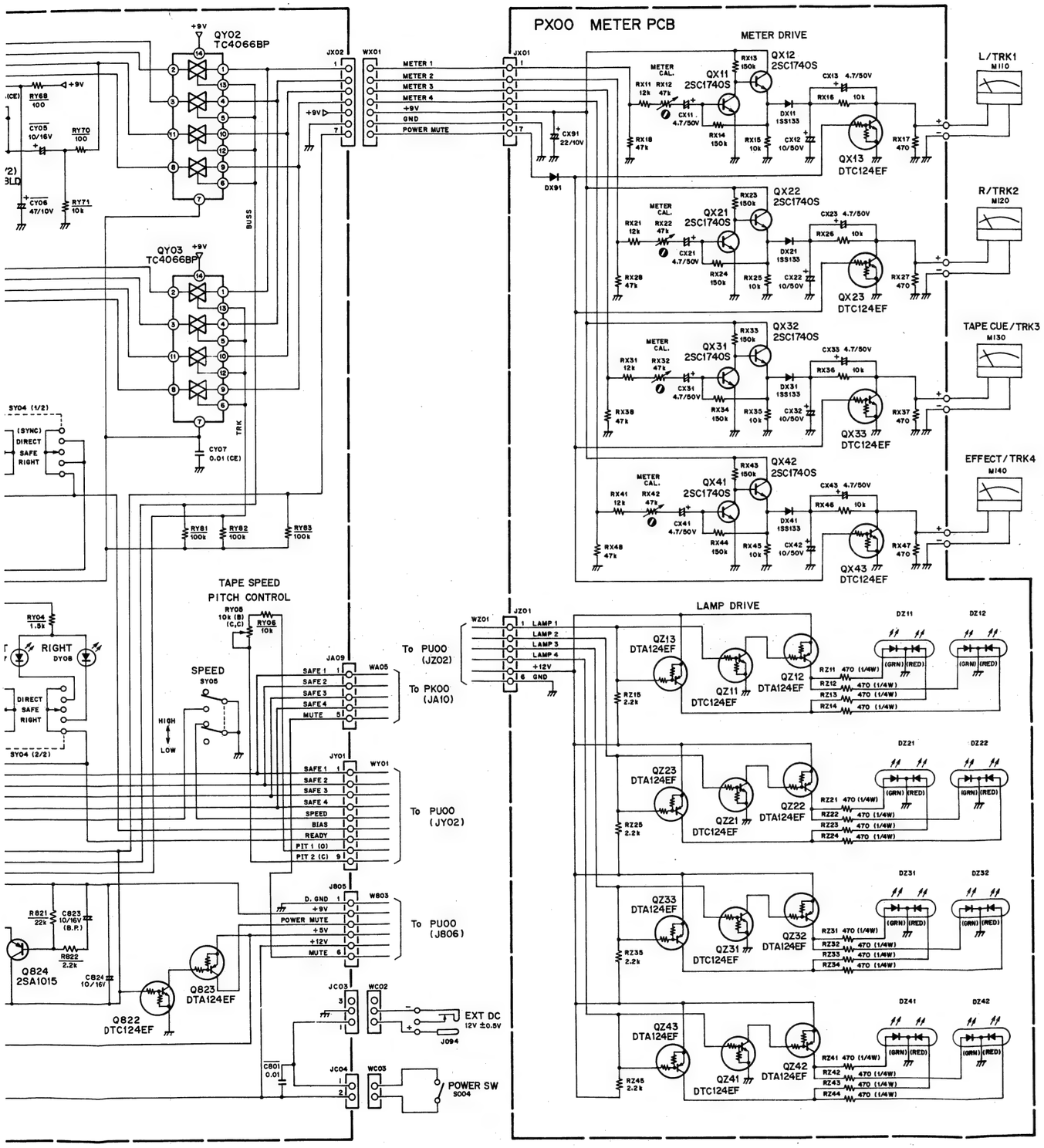

Q824 Q823 Q821 Q802 Q822
Q801 QY01 Q803 QY02
QY03
P800 CUE PCB
To MECHA
Q823
Q821, Q824



12. MIC

SYM

PIN NO.	
1	D1
2	D1
3	D1
4	D1
5	D1
6	R0
7	R0
8	R0
9	R0
10	R1
11	R1
12	R1
13	R1
14	R2
15	R2
16	R2
17	R2
18	RA
19	RA
20	R3
21	R3
22	R3
23	R3
24	R5
25	R5
26	R5
27	R5
28	R6
29	R6
30	R6
31	R6
32	Vc



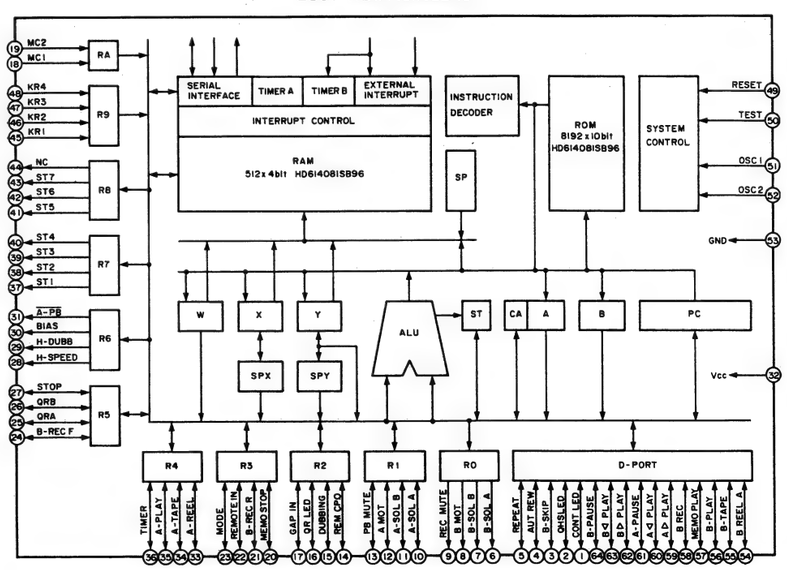
12. MICRO-PROCESSOR I/O PINS AND THEIR FUNCTIONS

SYM NO. QU01 TYPE NO. HD614081SD45

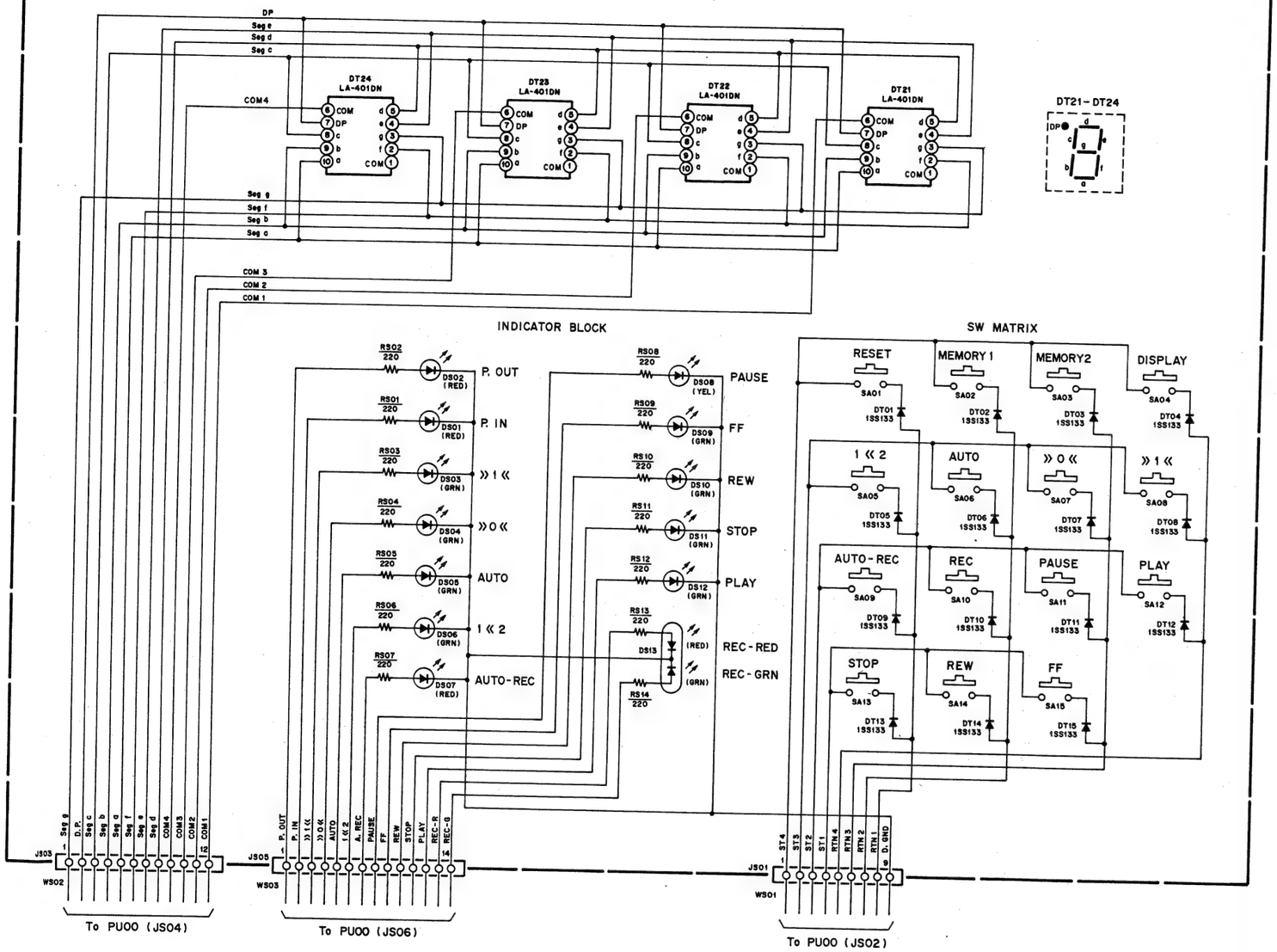
PIN NO.	PORT NAME		I/O	ACT	FUNCTION
1	D11	REW	O	H	LED-OUT (RWD)
2	D12	STOP	O	H	LED-OUT (STOP)
3	D13	PLAY	O	H	LED-OUT (PLAY)
4	D14	REC-R	O	H	LED-OUT (REC-RED)
5	D15	REC-G	O	H	LED-OUT (REC-GREEN)
6	R00	LAMP 1	O	H	VU METER LAMP 1
7	R01	LAMP 2	O	H	VU METER LAMP 2
8	R02	LAMP 3	O	H	VU METER LAMP 3
9	R03	LAMP 4	O	H	VU METER LAMP 4
10	R10	REC-M	O	H	RECORD MUTE CONTROL
11	R11	LINE-M	O	H	PLAY MUTE CONTROL
12	R12	BIAS	O	H	BIAS OUT CONTROL
13	R13	CUE-ATT	O	H	FAST CUEING ATTENUATION CONTROL
14	R20	SOL-A	O	H	SOLENOID DRIVE A
15	R21	SOL-B	O	H	SOLENOID DRIVE B
16	R22	MOTOR ON	O	H	MOTOR ON/$\overline{\text{OFF}}$ CONTROL
17	R23	SPEED	O	H	TAPE SPEED NORMAL/$\overline{\text{HIGH}}$ CONTROL
18	RA0	R. PAUSE	I	L	REMOTE PAUSE INPUT
19	RA1	R. PUNCH I/O	I	L	REMOTE PUNCH-IN/OUT INPUT
20	R30	REC SW	I	L	RECORD ENABLE
21	R31	PACK	I	L	TAPE IN
22	R32	F/R PLAY	I	L	FF. REW. PLAY SW
23	R33	SPD	I	H	TAPE SPEED $\overline{\text{NORMAL}}$/HIGH INPUT
24	R50	RTN 1	I	—	KEY MATRIX SIGNAL (IN)
25	R51	RTN 2	I	—	
26	R52	RTN 3	I	—	
27	R53	RTN 4	I	—	
28	R60	ST1	O	—	KEY MATRIX SIGNAL (OUT)
29	R61	ST2	O	—	
30	R62	ST3	O	—	
31	R63	ST4	O	—	
32	Vcc		—	—	POWER SUPPLY (+5V)

PIN NO.	PORT NAME		I/O	ACT	FUNCTION
33	R40/SCK	COM1	O	H	DYNAMIC DISPLAY D4 DIGIT
34	R41/S1	COM2	O	H	DYNAMIC DISPLAY D3 DIGIT
35	R42/S0	COM3	O	H	DYNAMIC DISPLAY D2 DIGIT
36	R43	COM4	O	H	DYNAMIC DISPLAY D1 DIGIT
37	R70	SEG d	O	L	DYNAMIC DISPLAY SEGMENT d
38	R71	SEG e	O	L	DYNAMIC DISPLAY SEGMENT e
39	R72	SEG f	O	L	DYNAMIC DISPLAY SEGMENT f
40	R73	SEG a	O	L	DYNAMIC DISPLAY SEGMENT a
41	R80	SEG b	O	L	DYNAMIC DISPLAY SEGMENT b
42	R81	SEG c	O	L	DYNAMIC DISPLAY SEGMENT c
43	R82	SEG g	O	L	DYNAMIC DISPLAY SEGMENT g
44	R83	D.P.	O	L	DYNAMIC DISPLAY DESIMAL POINT
45	R90	SAFE 1	I	L	REC SELECT-1 SAFE INPUT
46	R91	SAFE 2	I	L	REC SELECT-2 SAFE INPUT
47	R92	SAFE 3	I	L	REC SELECT-3 SAFE INPUT
48	R93	SAFE 4	I	L	REC SELECT-4 SAFE INPUT
49	RESET		I	—	POWER ON RESET
50	$\overline{\text{TEST}}$		I	—	TEST MODE
51	OSC1		I	—	4.0 MHz
52	OSC2		I	—	
53	GND		—	—	GROUND
54	D0	REEL P.	I	L	REEL PULSES
55	D1	READY	O	H	LED-OUT (REC SELECT LED)
56	D2	P-OUT	O	H	LED-OUT (PUNCH-OUT)
57	D3	P-IN	O	H	LED-OUT (PUNCH-IN)
58	D4	PAUSE	O	H	LED-OUT (PAUSE)
59	D5	A. REC	O	H	LED-OUT (AUTO REC)
60	D6	1 « 2	O	H	LED-OUT (AUTO REWIND)
61	D7	AUTO	O	H	LED-OUT (AUTO PLAY)
62	D8	» 0 «	O	H	LED-OUT (SEARCH ZERO)
63	D9	» 1 «	O	H	LED-OUT (SEARCH MEMORY-1)
64	D10	FF	O	H	LED-OUT (F. FWD)

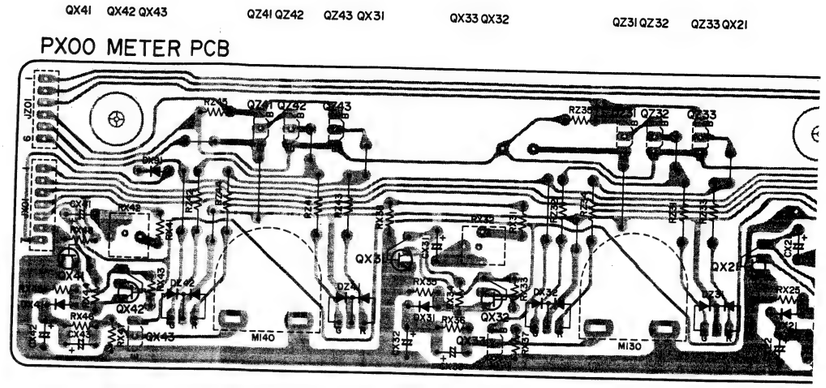
QU01 HD614081SD45



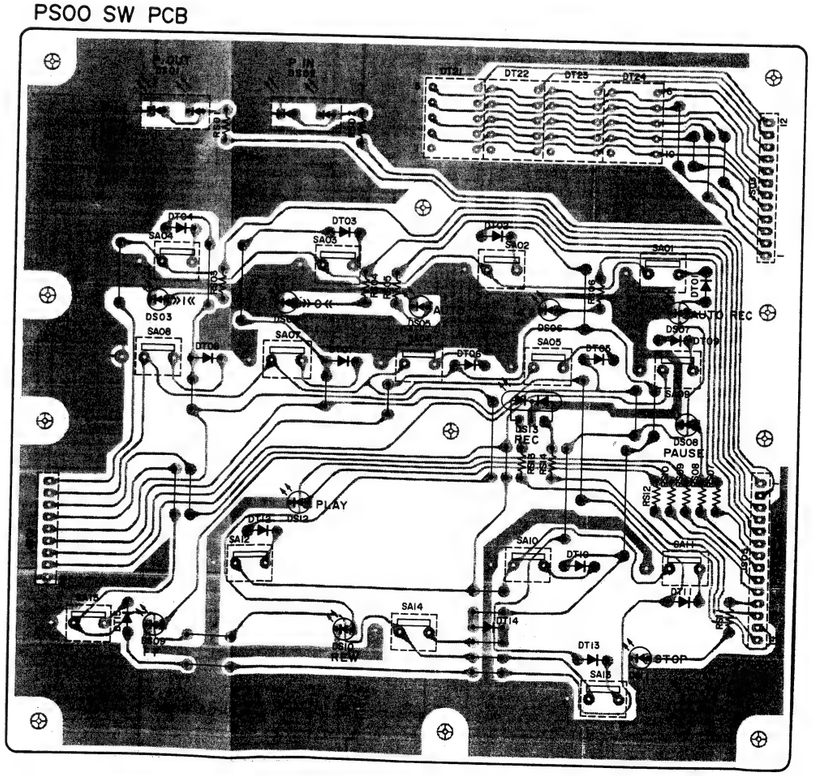
PS00 SW PCB

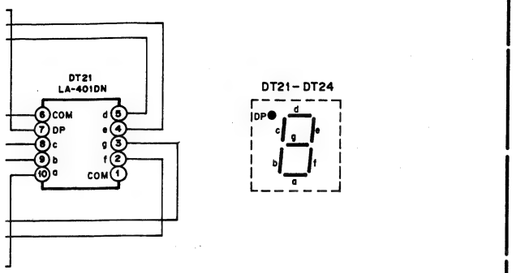


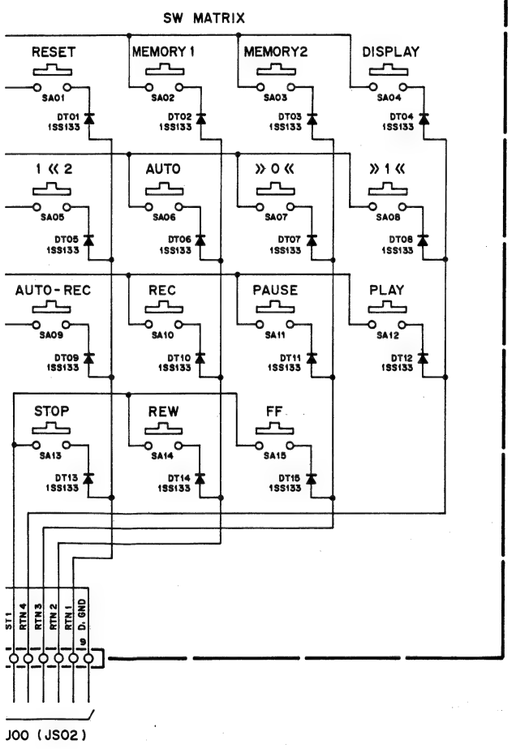
PX00 METER PCB



PS00 SW PCB

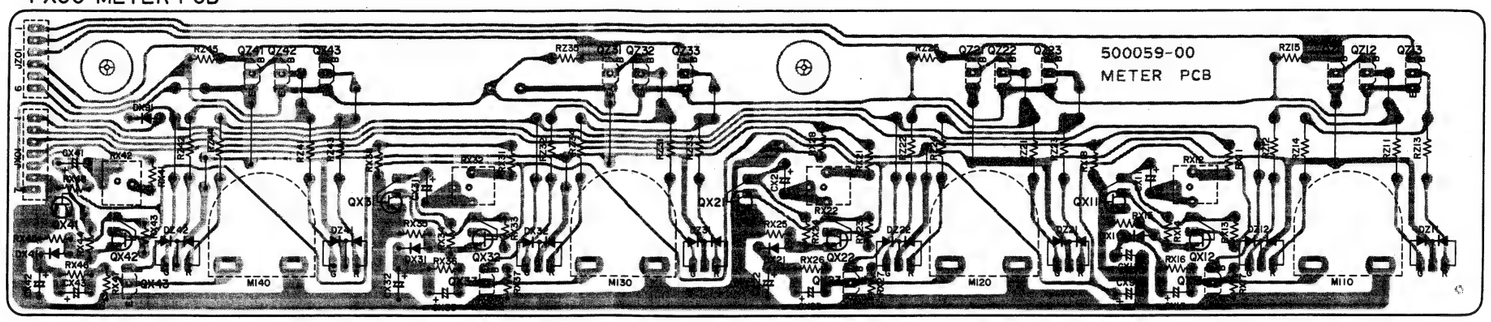


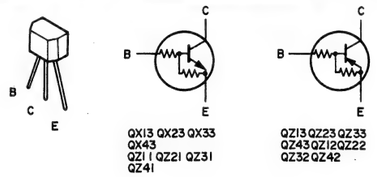




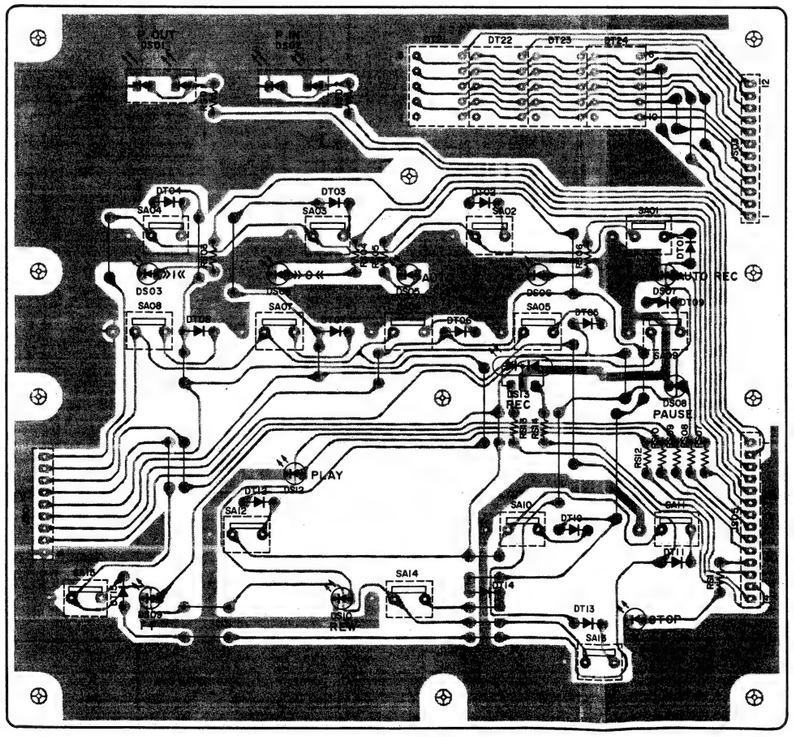
QX41 QX42 QX43 QZ41 QZ42 QZ43 QX31 QX33 QX32 QZ31 QZ32 QZ33 QX21 QX23 QX22 QZ21 QZ22 QZ23 QX11 QX13 QX12 QZ11 QZ12 QZ13

PX00 METER PCB

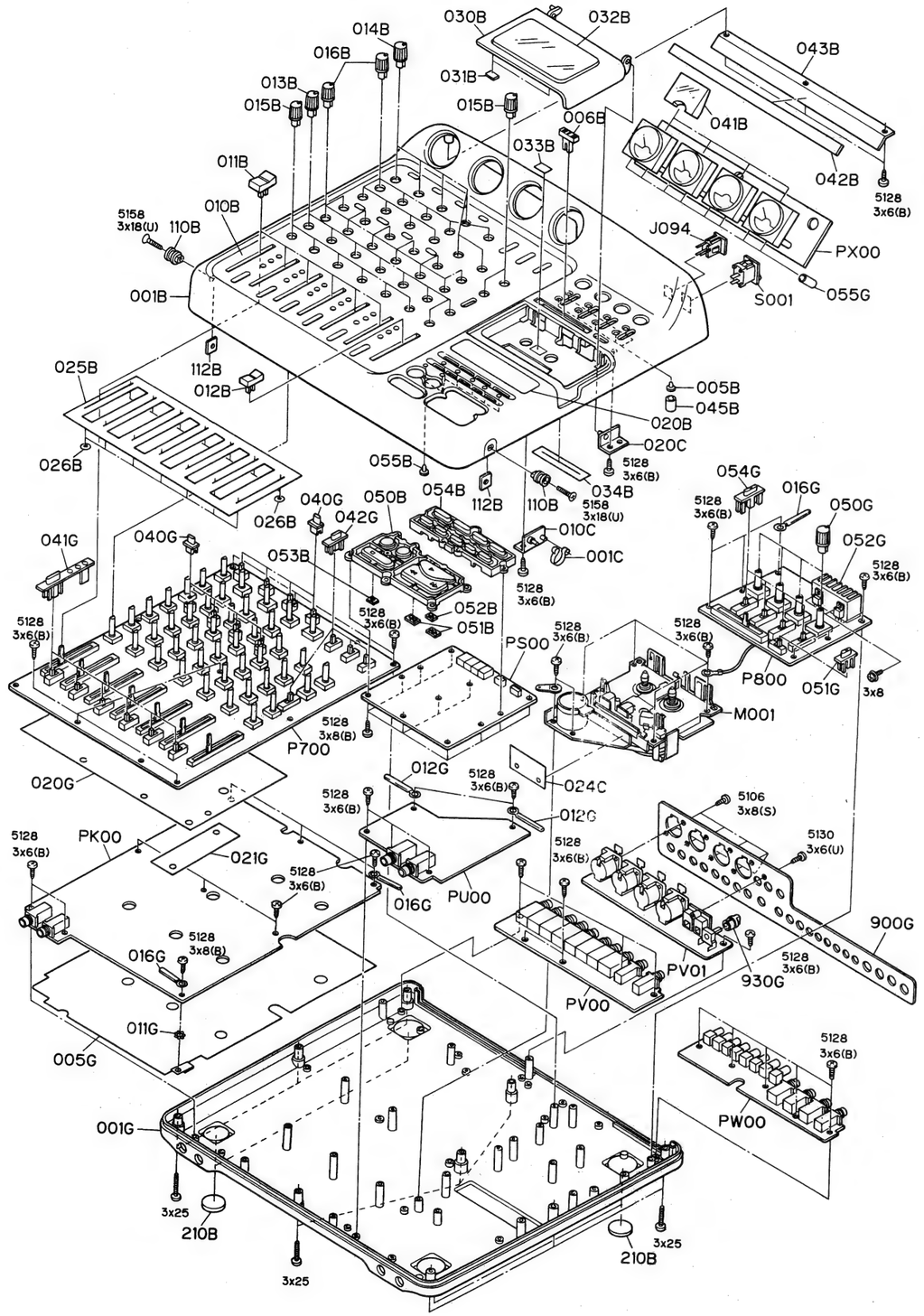




PS00 SW PCB



13. EXPLODED VIEWS AND PARTS LIST



REF. DESIG.	PART NO.	DESCRIPTION
001B	4822 426 51637	Case
005B	4822 381 11406	Lens, Rec Select
006B	4822 413 31736	Knob, Pitchcon
010B	4822 459 50769	Escutcheon
011B	4822 413 31738	Knob, Fader
012B	4822 413 31741	Knob, Master
013B	4822 413 31737	Knob, Green
014B	4822 413 31739	Knob, Red
015B	4822 413 31742	Knob, Brown
016B	4822 413 31743	Knob, White
020B	4822 459 50771	Escutcheon, Panel
026B	4822 505 11157	Stopper
030B	4822 426 60637	Door, Cassette
032B	4822 450 62071	Window, Door
041B	4822 381 11404	Lens, Meter
050B	4822 410 62594	Button, Play
051B	4822 381 11407	Lens, F. F / REW
052B	4822 381 11408	Lens, Play
053B	4822 381 11409	Lens, Stop
054B	4822 410 62595	Button, Memory
055B	4822 381 11405	Lens
110B	4822 532 11254	Collar, Strap
111B	4822 502 13776	Scrwe, Collar
112B	4822 505 11156	Nut
210B	4822 462 41142	Leg
001C	4822 492 71347	Leaf Spring
001G	4822 426 90113	Case, Bottom
040G	4822 410 62596	Button, XLR / Q-Factor
041G	4822 413 31732	Knob, Input
042G	4822 413 31734	Knob, Input
043G	4822 492 71346	Earth Spring
050G	4822 413 31742	Knob, Tape CUE
051G	4822 413 31735	Knob, Speed
054G	4822 413 31733	Knob, Rec Select
930G	4822 413 31744	Knob, Input Level
001T	4822 736 21714	User Manual
J094	4822 267 31644	Jack, DC
S001	4822 276 13398	Switch, Power
ZA01	4822 272 10346	A. C. Adaptor

14. ELECTRICAL PARTS LIST

ASSIGNMENT OF COMMON PARTS CODES.

RESISTOR

R＊＊＊ : (1) GD05 xxx 140, Carbon film fixed resistor, ±5% 1/4W
R＊＊＊ : (2) GD05 xxx 160, Carbon film fixed resistor, ±5% 1/6W

① — Resistance value

Examples ;
① Resistance value

0.1Ω...001	10Ω...100	1kΩ...102	100kΩ...104
0.5Ω...005	18Ω...180	2.7kΩ...272	680kΩ...684
1Ω...010	100Ω...101	10kΩ...103	1MΩ...105
6.8Ω...068	390Ω..391	22kΩ...223	4.7MΩ...475

(Note) Please distinguish 1/4W from 1/6W by the shape of parts used actually.

C＊＊＊ : CERAMIC CAP.
(1) DD1x xxx 370, Ceramic capacitor
Disc type
Temp.coeff.P350~N1000,50V
① ② — Capacity value / Tolerance

Examples
①Tolerance (Capacity deviation)
±0.25pF ... 0
±0.5pF ... 1
±5% ... 5
＊Tolerance of COMMON PARTS handled here are as follows :
0.5pF~ 5pF...±0.25pF
6pF~ 10pF...±0.5pF
12pF~ 560pF...±5%
②Capacity value

0.5pF...005	3pF...030	100pF...101
1pF...010	10pF...100	220pF...221
1.5pF...015	47pF...470	560pF...561

C＊＊＊ : CERAMIC CAP.
(1) DK16 xxx 300, High dielectric constant ceramic capacitor
Disc type
Temp.chara. 2B4, 50V
① — Capacity value

Examples
②Capacity value

100pF...101	1000pF...102	10000pF...103
470pF...471	2200pF...222	

C＊＊＊ : ELECTROLY CAP.(⧺), FILM CAP.(⧧)
(1) EA xxx xxx 10, Electrolytic capacitor
One-way lead type, Tolerance ±20%
① ② — Working voltage / Capacity value

Examples
①Capacity value

01.μF...104	4.7μF...475	100μF...107
0.33μF...334	10μF...106	330μF...337
1μF...105	22μF...226	1100μF...108
		2200μF...228

②Working voltage

6.3V...006	25V...025
10V...010	35V...035
16V...016	50V...050

(2) DF15 xxx 350, Plastic film capacitor
One-way type, Mylar ±5% 50V
① — Capacity value

Examples
①Capacity value

0.001μF (1000pF)...102	0.1μF...104
0.0018μF.....182	0.56μF...564
0.01μF.....103	1μF...105
0.015μF.....153	

REF. DESIG.	PART NO.	DESCRIPTION
		PK00-REC / PLAY AMP CIRCUIT BOARD
		PK00-CAPACITORS
CA12	4822 121 42708	Film 330pF ±5%
CA22	4822 121 70307	Film 270pF ±5%
CA52	4822 124 80516	Elect 10μF 35V (LL)
CA54	4822 121 43381	Film 470pF ±5%
CB12	4822 121 42708	Film 330pF ±5%
CB22	4822 121 70307	Film 270pF ±5%
CB54	4822 121 43381	Film 470pF ±5%
CC12	4822 121 42708	Film 330pF ±5%
CC22	4822 121 70307	Film 270pF ±5%
CC52	4822 124 80516	Elect 10μF 35V (LL)
CC54	4822 121 43381	Film 470pF ±5%
CD12	4822 121 42708	Film 330pF ±5%
CD22	4822 121 70307	Film 270pF ±5%
CD52	4822 124 80516	Elect 10μF 35V (LL)
CD54	4822 121 43381	Film 470pF ±5%
CE01	4822 123 30375	Film 820pF ±5%
CE05	4822 121 42344	Film 220pF ±5%
CE06	4822 123 30375	Film 820pF ±5%
CE07	4822 121 70306	Film 0.018μF ±5%
CE11	4822 123 30048	Film 0.01μF ±5%
CE12	4822 121 43381	Film 470pF ±5%
CE29	4822 121 42708	Film 330pF ±5%
CE52	4822 124 80516	Elect 10μF 35V (LL)
CE57	4822 121 42466	Film 390pF ±5%
CF01	4822 123 30375	Film 820pF ±5%
CF05	4822 121 42344	Film 220pF ±5%
CF06	4822 123 30375	Film 820pF ±5%
CF07	4822 121 70306	Film 0.018μF ±5%
CF11	4822 123 30048	Film 0.01μF ±5%
CF12	4822 121 43381	Film 470pF ±5%
CF29	4822 121 42708	Film 330pF ±5%
CF52	4822 124 80516	Elect 10μF 35V (LL)
CF57	4822 121 42466	Film 390pF ±5%
CG01	4822 123 30375	Film 820pF ±5%
CG05	4822 121 42344	Film 220pF ±5%
CG06	4822 123 30375	Film 820pF ±5%
CG07	4822 121 70306	Film 0.018μF ±5%
CG11	4822 123 30048	Film 0.01μF ±5%
CG12	4822 121 43381	Film 470pF ±5%
CG29	4822 121 42708	Film 330pF ±5%
CG52	4822 124 80516	Elect 10μF 35V (LL)
CG57	4822 121 42466	Film 390pF ±5%
CH01	4822 124 21903	Elect (B.P.) 1μF 50V
CH81	4822 122 32486	Ceramic 0.01μF +80% -20%
CJ01	4822 123 30375	Film 820pF ±5%
CJ05	4822 121 42344	Film 220pF ±5%
CJ06	4822 123 30375	Film 820pF ±5%
CJ07	4822 121 70306	Film 0.018μF ±5%
CJ11	4822 123 30048	Film 0.01μF ±5%
CJ12	4822 121 43381	Film 470pF ±5%
CJ29	4822 121 42708	Film 330pF ±5%
CJ52	4822 124 80516	Elect 10μF 35V (LL)
CJ57	4822 121 42466	Film 390pF ±5%
CL05	4822 121 70308	Film 0.027μF ±5%
CL08	4822 122 32486	Ceramic 0.01μF +80% -20%
C902	4822 122 32486	Ceramic 0.01μF +80% -20%
C903	4822 121 43379	Film 0.015μF ±5%
C906	4822 122 32486	Ceramic 0.01μF +80% -20%
C907	4822 122 32486	Ceramic 0.01μF +80% -20%
		PK00-RESISTORS
RA10	4822 100 20681	2.2KΩ, Triming; PB Level
RA12	4822 100 20681	2.2KΩ, Triming; PB EQ
RA50	4822 100 20681	2.2KΩ, Triming; DEC Time
RA61	4822 116 82751	1KΩ ±1% 1/6W
RB10	4822 100 20681	2.2KΩ, Triming; PB Level
RB12	4822 100 20681	2.2KΩ, Triming; PB EQ

REF. DESIG.	PART NO.	DESCRIPTION
RC10	4822 100 20681	2.2KΩ, Triming; PB Level
RC12	4822 100 20681	2.2KΩ, Triming; PB EQ
RC50	4822 100 20681	2.2KΩ, Triming; DEC Time
RC61	4822 116 82751	1KΩ ±1% 1/6W
RD10	4822 100 20681	2.2KΩ, Triming; PB Level
RD12	4822 100 20681	2.2KΩ, Triming; PB EQ
RE01	4822 100 11351	10KΩ, Triming; Bias TRK 1
RE30	4822 100 11351	10KΩ, Triming; REC Level
RE50	4822 100 20681	2.2KΩ, Triming; NEC Time
RE61	4822 116 82751	1KΩ ±1% 1/6W
RF01	4822 100 11351	10KΩ, Triming; Bias TRK 2
RF30	4822 100 11351	10KΩ, Triming; REC Level
RG01	4822 100 11351	10KΩ, Triming; Bias TRK 3
RG30	4822 100 11351	10KΩ, Triming; REC Level
RG50	4822 100 20681	2.2KΩ, Triming; NEC Time
RG61	4822 116 82751	1KΩ ±1% 1/6W
RH51	4822 100 11351	10KΩ, Triming; SYNC Cancel
RJ01	4822 100 11351	10KΩ, Triming; Bias TRK 4
RJ30	4822 100 11351	10KΩ, Triming;REC Level
		PK00-SEMICONDUCTORS
DA01 ~ DA06	4822 130 32778	Diode 1SS133
DA10	4822 130 32778	Diode 1SS133
DA21	4822 130 32778	Diode 1SS133
DB01 ~ DB06	4822 130 32778	Diode 1SS133
DB10	4822 130 32778	Diode 1SS133
DB21	4822 130 32778	Diode 1SS133
DC01 ~ DC06	4822 130 32778	Diode 1SS133
DC10	4822 130 32778	Diode 1SS133
DC21	4822 130 32778	Diode 1SS133
DD01 ~ DD06	4822 130 32778	Diode 1SS133
DD10	4822 130 32778	Diode 1SS133
DD21	4822 130 32778	Diode 1SS133
DE01	4822 130 32778	Diode 1SS133
DE02	4822 130 32778	Diode 1SS133
DF01	4822 130 32778	Diode 1SS133
DF02	4822 130 32778	Diode 1SS133
DG01	4822 130 32778	Diode 1SS133
DG02	4822 130 32778	Diode 1SS133
DJ01	4822 130 32778	Diode 1SS133
DJ02	4822 130 32778	Diode 1SS133
DL01	4822 130 32778	Diode 1SS133
D901 ~ D904	4822 130 32778	Diode 1SS133
QA01	4822 209 63132	IC BA7755A
QA02	4822 209 32315	IC NJM2068L-D
QA03	4822 130 61525	Transistor, Digital DTC124EF
QA11	4822 130 43191	Transistor, Digital 2SC1741 (Q, R)
QA12	4822 130 43191	Transistor, Digital 2SC1741 (Q, R)
QA13	4822 130 42431	Transistor, Digital 2SC1740 (R, S)
QA14	4822 130 42431	Transistor, Digital 2SC1740 (R, S)
QA51	4822 209 82507	IC AN6291
QA71	4822 209 32315	IC NJM2068L-D
QA72	4822 130 63283	Transistor 2SC3327B
QA73	4822 130 42431	Transistor 2SC1740 (R, S)
QA74	4822 209 82279	Transistor, Digital DTA124EF
QB01	4822 209 63132	IC BA7755A
QB03	4822 130 61525	Transistor, Digital DTC124EF
QB11	4822 130 43191	Transistor 2SC1741 (Q, R)

REF. DESIG.	PART NO.	DESCRIPTION
QB12	4822 130 43191	Transistor 2SC1741 (Q, R)
QB13	4822 130 42431	Transistor 2SC1740 (R, S)
QB14	4822 130 42431	Transistor 2SC1740 (R, S)
QB72	4822 130 63283	Transistor 2SC3327B
QB73	4822 130 42431	Transistor 2SC1740 (R, S)
QB74	4822 209 82279	Transistor, Digital DTA124EF
QC01	4822 209 63132	IC BA7755A
QC02	4822 209 32315	IC NJM2068L-D
QC03	4822 130 61525	Transistor, Digital DTC124EF
QC11	4822 130 43191	Transistor 2SC1741 (Q, R)
QC12	4822 130 43191	Transistor 2SC1741 (Q, R)
QC13	4822 130 42431	Transistor 2SC1740 (R, S)
QC14	4822 130 42431	Transistor 2SC1740 (R, S)
QC51	4822 209 82507	IC AN6291
QC71	4822 209 32315	IC NJM2068L-D
QC72	4822 130 63283	Transistor 2SC3327B
QC73	4822 130 42431	Transistor 2SC1740 (R, S)
QC74	4822 209 82279	Transistor, Digital DTA124EF
QD01	4822 209 63132	IC BA7755A
QD03	4822 130 61525	Transistor, Digital DTC124EF
QD11	4822 130 43191	Transistor, Digital 2SC1741 (Q, R)
QD12	4822 130 43191	Transistor, Digital 2SC1741 (Q, R)
QD13	4822 130 42431	Transistor, Digital 2SC1740 (R, S)
QD14	4822 130 42431	Transistor, Digital 2SC1740 (R, S)
QD72	4822 130 63283	Transistor 2SC3327B
QD73	4822 130 42431	Transistor, Digital 2SC1740 (R, S)
QD74	4822 209 82279	Transistor, Digital DTA124EF
QE01	4822 209 72874	IC μPC1297CA
QE02	4822 209 32315	IC NJM2068L-D
QE03	4822 209 32315	IC NJM2068L-D
QE11	4822 130 63282	Transistor 2SC3377
QE12	4822 130 42431	Transistor 2SC1740 (R, S)
QE13	4822 130 43191	Transistor 2SC1741 (Q, R)
QE14	4822 130 63281	F. E. T. 2SK362-BL
QE15	4822 130 63281	F. E. T. 2SK362-BL
QE16	4822 130 42431	Transistor 2SC1740 (R, S)
QE17	4822 130 42431	Transistor 2SC1740 (R, S)
QE31	4822 130 43191	Transistor 2SC1741 (Q, R)
QE51	4822 209 82507	IC AN6291
QE71	4822 130 42431	Transistor 2SC1740S (R, S)
QF11	4822 130 63282	Transistor 2SC3377
QF12	4822 130 42431	Transistor 2SC1740 (R, S)
QF13	4822 130 43191	Transistor 2SC1741 (Q, R)
QF14	4822 130 63281	F. E. T. 2SK362-BL
QF15	4822 130 63281	F. E. T. 2SK362-BL
QF16	4822 130 42431	Transistor 2SC1740S (R, S)
QF17	4822 130 42431	Transistor 2SC1740S (R, S)
QF31	4822 130 43191	Transistor 2SC1741 (Q, R)
QF71	4822 130 42431	Transistor 2SC1740 (R, S)
QG01	4822 209 72874	IC μPC1297CA
QG02	4822 209 32315	IC NJM2068L-D
QG03	4822 209 32315	IC NJM2068L-D
QG11	4822 130 63282	Transistor 2SC3377
QG12	4822 130 42431	Transistor 2SC1740 (R, S)
QG13	4822 130 43191	Transistor 2SC1741 (Q, R)
QG14	4822 130 63281	F. E. T. 2SK362-BL
QG15	4822 130 63281	F. E. T. 2SK362-BL
QG16	4822 130 42431	Transistor 2SC1740S (R, S)
QG17	4822 130 42431	Transistor 2SC1740S (R, S)
QG31	4822 130 43191	Transistor 2SC1741 (Q, R)
QG51	4822 209 82507	IC AN6291
QG71	4822 130 42431	Transistor 2SC1740S (R, S)
QH01	4822 209 82279	Transistor, Digital DTA124EF
QH02	4822 209 82279	Transistor, Digital DTA124EF
QH03	4822 209 82279	Transistor, Digital DTA124EF
QH11	4822 130 61525	Transistor, Digital DTC124EF
QH21	4822 130 61525	Transistor, Digital DTC124EF
QJ11	4822 130 63282	Transistor 2SC3377
QJ12	4822 130 42431	Transistor 2SC1740 (R, S)
QJ13	4822 130 43191	Transistor 2SC1741 (Q, R)
QJ14	4822 130 63281	F. E. T. 2SK362-BL
QJ15	4822 130 63281	F. E. T. 2SK362-BL
QJ16	4822 130 42431	Transistor 2SC1740 (R, S)
QJ17	4822 130 42431	Transistor 2SC1740 (R, S)
QJ31	4822 130 43191	Transistor 2SC1741 (Q, R)
QJ71	4822 130 42431	Transistor 2SC1740 (R, S)

REF. DESIG	PART NO.	DESCRIPTION
QL01	4822 130 63282	Transistor 2SC3377
QH51	4822 209 32315	IC NJM2068L-D
Q901	4822 130 63282	Transistor 2SC3377
		PK00-MISCELLANEOUS
LA01	4822 153 70064	Choke Coil 8mH
LA02	4822 153 70064	Choke Coil 8mH
LB01	4822 153 70064	Choke Coil 8mH
LB02	4822 153 70064	Choke Coil 8mH
LC01	4822 153 70064	Choke Coil 8mH
LC02	4822 153 70064	Choke Coil 8mH
LD01	4822 153 70064	Choke Coil 8mH
LD02	4822 153 70064	Choke Coil 8mH
LE01	4822 148 81318	Bias OSC 80KHz
LE02	4822 148 81319	Erase OSC 80KHz
LE03	4822 153 70064	Choke Coil 8mH
LE04	4822 153 70064	Choke Coil 8mH
LF01	4822 148 81318	Bias OSC 80KHz
LF02	4822 148 81319	Erase OSC 80KHz
LF03	4822 153 70064	Choke Coil 8mH
LF04	4822 153 70064	Choke Coil 8mH
LG01	4822 148 81318	Bias OSC 80KHz
LG02	4822 148 81319	Erase OSC 80KHz
LG03	4822 153 70064	Choke Coil 8mH
LG04	4822 153 70064	Choke Coil 8mH
LJ01	4822 148 81318	Bias OSC 80KHz
LJ02	4822 148 81319	Erase OSC 80KHz
LJ03	4822 153 70064	Choke Coil 8mH
LJ04	4822 153 70064	Choke Coil 8mH
LL01	4822 157 70494	Choke Coil 1.2mH
LL02	4822 148 81321	Bias OSC 80KHz
L901	4822 148 81319	Erase OSC 80KHz
L902	4822 157 70495	Choke Coil 330μH
L903	4822 157 70495	Choke Coil 330μH
		PS00-KEY SW/ DISPLAY CIRCUIT BOARD
		PS00-SEMICONDUCTORS
DS01	4822 130 83371	L.E. D. LT9200D (RED)
DS02	4822 130 83371	L.E. D. LT9200D (RED)
DS03 ~ DS06	4822 130 82964	L. E. D. GL3KG8 (GRN)
DS07	4822 130 82955	L. E. D. GL3PR8 (RED)
DS08	4822 130 80325	L. E. D. GL3AY8 (YEL)
DS09 ~ DS12	4822 130 82964	L. E. D. GL3KG8 (GRN)
DS13	4822 130 82159	L. E. D. GL3ED8 (RED/ GRN)
DT01 ~ DT15	4822 130 32778	Diode 1SS133
DT21 ~ DT24	4822 130 83372	L. E. D. LA-401DN (ORG) 7SEG
		PS00-MISCELLANEOUS
SA01 ~ SA15	4822 276 13399	Switch Tact

REF. DESIG.	PART NO.	DESCRIPTION
		PU00-CPU CIRCUIT BOARD
		PU00-CAPACITORS
CM01	4822 122 30103	Ceramic 0.022μF +80% -20%
CU03	4822 122 40617	Ceramic,stocked 0.1μF +80% 20%
CU10	4822 122 32486	Ceramic 0.01μF +80% -20%
CU13	4822 122 32486	Ceramic 0.01μF +80% -20%
		PU00-RESISTORS
RM09	4822 100 11351	10K Ω (B), Trimming
RM11	4822 100 11351	10K Ω (B), Trimming
RU81	4822 111 92145	10K Ω x 5, Array
RU82	4822 111 92145	10K Ω x 5, Array
RU83	4822 111 92144	10K Ω x 8, Array
RU84	4822 111 92145	10K Ω x 5, Array
RU85	4822 111 92146	10K Ω x 4, Array
RU86	4822 111 92145	10K Ω x 5, Array
		PU00-SEMICONDUCTORS
DM01	4822 130 32816	Diode 1SR35-200A
DM02	4822 130 32816	Diode 1SR35-200A
DM03	4822 130 32816	Diode 1SR35-200A
DU11	4822 130 32778	Diode 1SS133
DU31 ~ DU34	4822 130 32778	Diode 1SS133
DU51	4822 130 32778	Diode 1SS133
DU52	4822 130 32778	Diode 1SS133
QM01	4822 130 61525	Transistor, Digital DTC124EF
QM02	4822 130 63285	Transistor, Digital 2SD1994A
QM03	4822 130 61525	Transistor, Digital DTC124EF
QM04	4822 130 63285	Transistor, Digital 2SD1994A
QM05	4822 130 61525	Transistor, Digital DTC124EF
QM06	4822 130 63286	Transistor, Digital 2SD1266A
QM07	4822 130 61525	Transistor, Digital DTC124EF
QM08	4822 130 61525	Transistor, Digital DTC124EF
QM09	4822 209 82279	Transistor, Digital DTA124EF
QM10	4822 130 63281	FET 2SK362-BL
QM11	4822 130 63281	FET 2SK362-BL
QM12	4822 130 63281	FET 2SK362-BL
QR01 ~ QR04	4822 130 43794	Transistor, Digital 2SC1815 (Y, GR)
QR05	4822 209 12553	IC TC74HC240
QU01	4822 209 32318	Microprocessor HD614081S
QU02	4822 209 82279	Transistor, Digital DTA124EF
QU03	4822 209 82279	Transistor, Digital DTA124EF
QU11	4822 130 61525	Transistor, Digital DTC124EF
QU12	4822 130 63279	Transistor, Digital DTC143EF
QU13 ~ QU15	4822 130 61525	Transistor, Digital DTC124EF
QU41 ~ QU44	4822 130 61525	Transistor, Digital DTC124EF
QU51	4822 130 61525	Transistor, Digital DTC124EF
QU53	4822 130 61525	Transistor, Digital DTC124EF
QU54	4822 130 61525	Transistor, Digital DTC124EF
		PU00-MISCELLANEOUS
LU01	4822 157 70493	Filter EXC-EMT271BT
LU02	4822 157 70493	Filter EXC-EMT271BT
LU11	4822 280 20532	Relay MZ-12HG
XU01	4822 242 81466	Crystal 4MHz

REF. DESIG.	PART NO.	DESCRIPTION
		PV00-INPUT JACK CIRCUIT BOARD
JV41 ~ JV46	4822 267 31499	Jack, CH1-CH6
JV51 ~ JV54	4822 267 31643	Jack, Insert CH1-CH4
		PV01-XLR JACK CIRCUIT BOARD
RV90	4822 101 30817	Variable Resistor 10K Ω (A) x 2
JV81 ~ JV84	4822 267 31645	Jack, Cannon; Mic/ Line
		PW00-OUTPUT/ INPUT JACK CIRCUIT BOARD
		PW00-CAPACITORS
CW01 ~ CW05	4822 124 21903	Elect 1μF 50V
		PW00-SEMICONDUCTORS
QW01 ~ QW05	4822 130 63284	Transistor 2SC3327A
		PW00-MISCELLANEOUS
JW41	4822 290 81588	Jack, RCA; 2P RED / WHT
JW51	4822 290 81589	Jack, RCA; 2P BLK
JW52	4822 290 81589	Jack, RCA; 2P BLK
JW53	4822 290 81589	Jack, RCA; 2P BLK
JW61	4822 290 81589	Jack, RCA; 2P BLK
JW71	4822 267 31499	Jack, EFF, RTN (L/ Mono)
JW72	4822 267 31499	Jack, EFF, RTN (R)
JW81	4822 267 31499	Jack, EFF, SEND
JW82	4822 267 31499	Jack, Tape CUE Out
		PX00-METER CIRCUIT BOARD
		PX00-CAPACITORS
CX91	4822 124 80515	Elect 22μF 10V
		PX00-RESISTORS
RX12	4822 100 11372	47KΩ (B), Trimming; Meter 1
RX22	4822 100 11372	47KΩ (B), Trimming; Meter 2
RX32	4822 100 11372	47KΩ (B), Trimming; Meter 3
RX42	4822 100 11372	47KΩ (B), Trimming; Meter 4
		PX00-SEMICONDUCTORS
DX11	4822 130 32778	Diode 1SS133
DX21	4822 130 32778	Diode 1SS133
DX31	4822 130 32778	Diode 1SS133
DX41	4822 130 32778	Diode 1SS133
DX91	4822 130 32778	Diode 1SS133
DZ11	4822 130 82159	L. E. D. GL3ED8 (RED/ GRN)
DZ12	4822 130 82159	L. E. D. GL3ED8 (RED/ GRN)
DZ21	4822 130 82159	L. E. D. GL3ED8 (RED/ GRN)
DZ22	4822 130 82159	L. E. D. GL3ED8 (RED/ GRN)
DZ31	4822 130 82159	L. E. D. GL3ED8 (RED/ GRN)
DZ32	4822 130 82159	L. E. D. GL3ED8 (RED/ GRN)
DZ41	4822 130 82159	L. E. D. GL3ED8 (RED/ GRN)
DZ42	4822 130 82159	L. E. D. GL3ED8 (RED/ GRN)

REF. DESIG.	PART NO.	DESCRIPTION
QX11	4822 130 42431	Transistor 2SC1740S (R, S)
QX12	4822 130 42431	Transistor 2SC1740S (R, S)
QX13	4822 130 61525	Transistor, Digital DTC124EF
QX21	4822 130 42431	Transistor 2SC1740S (R, S)
QX22	4822 130 42431	Transistor 2SC1740S (R, S)
QX23	4822 130 61525	Transistor, Digital DTC124EF
QX31	4822 130 42431	Transistor 2SC1740S (R, S)
QX32	4822 130 42431	Transistor 2SC1740S (R, S)
QX33	4822 130 61525	Transistor, Digital DTC124EF
QX41	4822 130 42431	Transistor 2SC1740S (R, S)
QX42	4822 130 42431	Transistor 2SC1740S (R, S)
QX43	4822 130 61525	Transistor, Digital DTC124EF
QZ11	4822 130 61525	Transistor, Digital DTC124EF
QZ12	4822 209 82279	Transistor, Digital DTA124EF
QZ13	4822 209 82279	Transistor, Digital DTA124EF
QZ21	4822 130 61525	Transistor, Digital DTC124EF
QZ22	4822 209 82279	Transistor, Digital DTA124EF
QZ23	4822 209 82279	Transistor, Digital DTA124EF
QZ31	4822 130 61525	Transistor, Digital DTC124EF
QZ32	4822 209 82279	Transistor, Digital DTA124EF
QZ33	4822 209 82279	Transistor, Digital DTA124EF
QZ41	4822 130 61525	Transistor, Digital DTC124EF
QZ42	4822 209 82279	Transistor, Digital DTA124EF
QZ43	4822 209 82279	Transistor, Digital DTA124EF
		PX00-MISCELLANEOUS
MI10	4822 345 31002	D.C. Meter 200-S19-236
MI20	4822 345 31002	D.C. Meter 200-S19-236
MI30	4822 345 31002	D.C. Meter 200-S19-236
MI40	4822 345 31002	D.C. Meter 200-S19-236
		P700-MIXER AMP VOILUME CIRCUIT BOARD
		P700-CAPACITORS
CK03	4822 122 32486	Ceramic 0.01μF +80% -20%
CK04	4822 122 32486	Ceramic 0.01μF +80% -20%
C103	4822 122 32486	Ceramic 0.01μF +80% -20%
C115	4822 122 32486	Ceramic 0.01μF +80% -20%
C136	4822 121 70219	Film 8200pF ±5%
C137	4822 121 70219	Film 8200pF ±5%
C203	4822 122 32486	Ceramic 0.01μF +80% -20%
C215	4822 122 32486	Ceramic 0.01μF +80% -20%
C236	4822 121 70219	Film 8200pF ±5%
C237	4822 121 70219	Film 8200pF ±5%
C303	4822 122 32486	Ceramic 0.01μF +80% -20%
C315	4822 122 32486	Ceramic 0.01μF +80% -20%
C336	4822 121 70219	Film 8200pF ±5%
C337	4822 121 70219	Film 8200pF ±5%
C403	4822 122 32486	Ceramic 0.01μF +80% -20%
C415	4822 122 32486	Ceramic 0.01μF +80% -20%
C436	4822 121 70219	Film 8200pF ±5%
C437	4822 121 70219	Film 8200pF ±5%
C515	4822 122 32486	Ceramic 0.01μF +80% -20%
		P700-RESISTORS
RN00	4822 101 30816	10K Ω (A) x 2, Variable
RN30	4822 101 30811	10K Ω (A), Variable
RN55	4822 101 30811	10K Ω (A), Variable
RN70	4822 101 30816	10K Ω (A) x 2, Variable
RN80	4822 101 30816	10K Ω (A) x 2, Variable
RN98	4822 052 11339	3.3 Ω NF ±5% 1/2W
RN99	4822 052 11339	3.3 Ω NF ±5% 1/2W
R110	4822 101 30812	10K Ω (C), Variable
R120	4822 101 30822	50K Ω (A), Variable
R140	4822 101 30813	100K Ω (B), Variable
R150	4822 101 30818	100K Ω (C) x 2, Variable
R160	4822 101 30815	50K Ω (B), Variable
R165	4822 101 30815	50K Ω (B), Variable
R180	4822 101 30814	5K Ω (B), Variable
R185	4822 101 30811	10K Ω (A), Variable
R210	4822 101 30812	10K Ω (C), Variable
R220	4822 101 30822	50K Ω (A), Variable
R240	4822 101 30813	100K Ω (B), Variable
R250	4822 101 30818	100K Ω (C), Variable
R260	4822 101 30815	50K Ω (B), Variable
R265	4822 101 30815	50K Ω (B), Variable

REF. DESIG.	PART NO.	DESCRIPTION
R280	4822 101 30814	5K Ω (B), Variable
R285	4822 101 30811	10K Ω (A), Variable
R310	4822 101 30812	10K Ω (C), Variable
R320	4822 101 30822	50K Ω (A), Variable
R340	4822 101 30813	100K Ω (B), Variable
R350	4822 101 30818	100K Ω (C) x 2, Variable
R360	4822 101 30815	50K Ω (B), Variable
R365	4822 101 30815	50K Ω (B), Variable
R380	4822 101 30814	5K Ω (B), Variable
R385	4822 101 30811	10K Ω (A), Variable
R410	4822 101 30812	10K Ω (C), Variable
R420	4822 101 30822	50K Ω (A), Variable
R440	4822 101 30813	100K Ω (B), Variable
R450	4822 101 30818	100K Ω (C) x 2, Variable
R460	4822 101 30815	50K Ω (B), Variable
R465	4822 101 30815	50K Ω (B), Variable
R480	4822 101 30814	5K Ω (B), Variable
R485	4822 101 30811	10K Ω (A), Variable
R510	4822 101 30812	10K Ω (C), Variable
R520	4822 101 30822	50K Ω (A), Variable
R560	4822 101 30815	50K Ω (B), Variable
R565	4822 101 30815	50K Ω (B), Variable
R580	4822 101 30814	5K Ω (B), Variable
R585	4822 101 30811	10K Ω (A), Variable
R610	4822 101 30812	10K Ω (C), Variable
R620	4822 101 30822	50K Ω (A), Variable
R660	4822 101 30815	50K Ω (B), Variable
R665	4822 101 30815	50K Ω (B), Variable
R680	4822 101 30814	5K Ω (B), Variable
R685	4822 101 30811	10K Ω (A), Variable
R720	4822 101 30819	10K Ω (A) x 2, Variable
		P700-SEMICONDUCTORS
QK01	4822 209 32315	IC NJM2068L-D
QK02	4822 209 32315	IC NJM2068L-D
QN01	4822 209 32315	IC NJM2068L-D
QN02	4822 209 32316	IC NJM2073S
QN03	4822 209 32316	IC NJM2073S
QN31	4822 209 32315	IC NJM2068L-D
QN51	4822 209 32315	IC NJM2068L-D
Q101 ~ Q104	4822 209 32315	IC NJM2068L-D
Q105	4822 130 63281	F. E. T. 2SK362-BL
Q106	4822 209 32315	IC NJM2068L-D
Q201 ~ Q204	4822 209 32315	IC NJM2068L-D
Q205	4822 130 63281	F. E. T. 2SK362-BL
Q301 ~ Q304	4822 209 32315	IC NJM2068L-D
Q305	4822 130 63281	F. E. T. 2SK362-BL
Q306	4822 209 32315	IC NJM2068L-D
Q401 ~ Q404	4822 209 32315	IC NJM2068L-D
Q405	4822 130 63281	F. E. T. 2SK362-BL
Q501	4822 209 32315	IC NJM2068L-D
Q504	4822 209 32315	IC NJM2068L-D
Q604	4822 209 32315	IC NJM2068L-D
Q701	4822 209 32315	IC NJM2068L-D
Q702	4822 209 32315	IC NJM2068L-D
		P700-MISCELLANEOUS
SK01	4822 277 21687	Switch, Slide Sync
SN01	4822 277 21686	Switch, Slide Input
SN02	4822 277 21687	Switch, Slide Meter
SN03	4822 277 21687	Switch, Slide DBX
S101	4822 276 13401	Switch, Push XLR CH1
S102	4822 277 21686	Switch, Slide Input CH1
S103	4822 276 13401	Switch, Push Mid-EQ CH1
S201	4822 276 13401	Switch, Push XLR CH2
S202	4822 277 21686	Switch, Slide Input CH2
S203	4822 276 13401	Switch, Push Mid-EQ CH2
S301	4822 276 13401	Switch, Push XLR CH3

REF. DESIG.	PART NO.	DESCRIPTION
S302	4822 277 21686	Switch, Slide Input CH3
S303	4822 276 13401	Switch, Push Mid-EQ CH3
S401	4822 276 13401	Switch, Push XLR CH3
S402	4822 277 21686	Switch, Slide Input CH4
S403	4822 276 13401	Switch, Push Mid-EQ CH4
S502	4822 277 21686	Switch, Slide Direct CH5
S602	4822 277 21686	Switch, Slide Direct CH6
		P800-CUE VOLUME CIRCUIT BOARD
		P800-CAPACITORS
CY07	4822 122 32486	Ceramic 0.01μF +80% -20%
C802	4822 122 32486	Ceramic 0.01μF +80% -20%
C805	4822 122 32486	Ceramic 0.01μF +80% -20%
C806	4822 122 32486	Ceramic 0.01μF +80% -20%
C808	4822 122 32486	Ceramic 0.01μF +80% -20%
C809	4822 122 32486	Ceramic 0.01μF +80% -20%
C823	4822 124 23112	Elect (B. P.) 10μF 16V
C824	4822 124 23112	Elect (B. P.) 10μF 16V
		P800-RESISTORS
RY05	4822 101 30821	10K Ω (B), Variable
RY11	4822 101 30811	10K Ω (A), Variable
RY21	4822 101 30811	10K Ω (A), Variable
RY31	4822 101 30811	10K Ω (A), Variable
RY41	4822 101 30811	10K Ω (A), Variable
		P800-SEMICONDUCTORS
DY01 ~ DY08	4822 130 82955	L. E. D. GL3PR8 (RED)
D821	4822 130 32778	Diode 1SS133
D822	4822 130 32778	Diode 1SS133
QY01	4822 209 32315	IC NJM2068L-D
QY02	4822 209 82569	IC TC4066BP
QY03	4822 209 82569	IC TC4066BP
Q801	4822 209 32317	IC μPC2409HF
Q802	4822 209 61847	IC NJM78M05FA
Q803	4822 209 71373	IC NJM78L05A
Q821	4822 209 82279	Transistor, Digital DTA124EF
Q822	4822 130 42961	Transistor 2SA1015
Q823	4822 130 61525	Transistor, Digital DTC124EF
Q824	4822 209 82279	Transistor, Digital DTA124EF
		P800-MISCELLANEOUS
SY01 ~ SY04	4822 277 21688	Switch, Slide
SY05	4822 277 21687	Switch, Slide

NOTE ON SAFETY :
Symbol ▲ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ▲ . Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.